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## DISEASES CAUSED BY BACTERIA AND FUNGI

Mondini, S. & Gasparini, U. (1960). Sensibilità agli antibiotici e tipizzazione fagica di stafilococchi di provenienza bovina. [**Sensitivity to antibiotics and phage typing of staphylococci isolated from cattle.**]—Nuova Vet. **36,** 164-167. [Summaries in English and French.] **2040**

Of 51 staphylococcal strains, isolated from cows' milk and considered pathogenic, 43 were sensitive to sodium penicillin; 46 to penicillin V and tetracycline; 45 to streptomycin and spiramycin; 48 to chloramphenicol; and 14 to sulphonamides. The penicillins produced the widest inhibitory zones. Phage lysis was obtained with 36 strains of which 2 could not be typed because they were lysed by various phages. There was no correlation between phage type and antibiotic sensitivity. —T.E.G.R.

Stamp (1961). **Antibacterial immunity to Staphylococcus pyogenes in rabbits.**—Brit. J. exp. Path. **42,** 30-37. [Author's summary.] **2041**

Staphylococcal vaccines given subcutaneously protected rabbits against challenge with a weakly α-toxigenic strain. The vaccines consisted of a soluble fraction obtained from washed cells by ultrasonic disruption and also in one experiment by shaking. The sera of immunized animals contained no appreciable amounts of anti-α lysin.

Moro S., M. (1958-59). Fiebre de las alpacas o estreptococosis. [**Streptococcal fever in alpacas.**]—Rev. Fac. Med. vet., Lima **13-14,** 7-25. [Summary in English.] **2042**

The disease is characterized by low morbidity and high mortality. Symptoms are: dullness, anorexia and fever (up to 41·2°C.) and local oedema (when infection occurs through wounds). P.M. findings are: coagulated fibrino-purulent exudate in the abdominal and thoracic cavities, petechiae and ecchymoses in the peritoneum and pleura, hepatization of the lungs, and local subcutaneous oedema (in wound infection). Mammary gland, lung, spleen, subcutaneous tissue and exudate were used in transmission experiments in sheep, g.pigs and alpacas; results were inconclusive. Culture of exudate and tissue material yielded *Streptococcus pyogenes.*—T.E.G.R.

Ochi, Y., Ogata, M. & Kanoe, M. (1960). [**Studies on streptococci. I. Classification.**] —Jap. J. vet. Sci. **22,** 353-361. [In Japanese. Summary in English.] **2043**

Details were given of classification of streptococci by means of heat and bile resistance, in 376 strains obtained from the bovine udder, the intestine of man, cattle, horses, pigs, goats, rabbits, hamsters, rats, mice, fowls, and the mouth of man and cattle. —E.G.

Middleton, G. K. & Standen, A. C. (1961). **The electrocardiogram in fatal anthrax bacteremia.**—J. infect. Dis. **108,** 85-89. **2044**

Bacteraemia was demonstrated in four rhesus monkeys 30 hours after infection with anthrax, the number of bacteria increasing 12–24 hours before death. All four monkeys were fever-free. P.M. toxin was demonstrable in the blood of two of them. Electrocardiographically there was no evidence, even two hours before death, of primary myocardial damage, sufficiently serious to affect the heart muscle either structurally or functionally. It was concluded that circulatory shock probably associated with toxic damage to peripheral tissue, resulted in loss of vascular tone and efficiency.—E.G.

Röhr, W. & Schwarz, H. (1961). Ein kasuistischer Beitrag zur Cereus-Mastitis des Rindes. **[Bacillus cereus mastitis in a cow.]**—Berl. Münch. tierärztl. Wschr. **74,** 53-54. [Summary in English.] **2045**

A description of the pathology, bacteriology and clin. picture of mastitis in the left hind quarter of a cow, which resisted penicillin treatment and became worse after Supronal and chlortetracycline therapy. The cow was slaughtered the fifth day after the onset of the disease and *Bacillus cereus* was isolated in pure culture from the affected quarter. *B. cereus* was also demonstrated in dust and dry faeces from the byre.—E.G.

Bonventre, P. F., Nordberg, B. K. & Schmiterlöw, C. G. (1961). **An autoradiographic study of radioactively labelled Bacillus cereus in the mouse.**—Acta path. microbiol. scand. **51,** 157-163. [In English. Authors' summary modified.] **2046**

An autoradiographic technique for the study of infectious processes is described. Strains of *B. cereus* pathogenic for mice were labelled with $S^{35}$ and injected intravenously. A study of the distribution of the organisms from the blood stream to body organs showed that the results did not conflict with those from purely microbiological techniques.

Meyn, A. (1961). Die Fortschritte der Rindertuberkulosebekämpfung in der Bundesrepublik (Stand vom 1.7.1960). **[Advances in the control of bovine tuberculosis in the Federal German Republic. Position on July 1st 1960.]**—Rindertuberk. u. Brucellose **10,** 27-34. **2047**

From July 1st 1959 to July 1st 1960, new registrations of TB.-free herds in the German Federal Republic numbered 74,704, comprising 1,349,356 cattle, bringing the total number of TB.-free herds to 1,185,615 or 93%. It is suggested that many non-specific reactions could be avoided by using diluted tuberculin. The present official dose for the tuberculin test is 0·1 ml., equalling 5,000 international tuberculin units. It has been shown that 250 units or less are quite adequate.

—E.G.

Englert, H. K. & Nassal, J. (1961). Untersuchungen über das pathologisch-histologische Bild der durch die 3 Typen des Tuberkuloseerregers hervorgerufenen Veränderungen beim Rind. **[Pathology of lesions produced by the three types of tubercle bacillus in cattle.]**—Rindertuberk. u. Brucellose **10,** 21-27. **2048**

Six types of histological lesions were distinguishable in 268 newly infected cattle from TB.-free herds. Type 1 consisted of typical tubercles with necrotic calcified centres, surrounded by a narrow caseous zone, an epithelioid cell zone with giant cells and a peripheral zone of lymphocytes. Type 2 was generally exudative, with extensive caseation but no or very little calcification and indistinct demarcation. Type 3 was similar to type 2, with caseous areas containing calcified foci, acting as foreign bodies. Type 4 was characterized by extensive specific granulation tissue, rich in giant cells, with indistinct demarcation and occasional caseous foci. Type 5 was characterized by early calcifying small foci, and type 6 by strong calcification, hardly any caseation, small epithelioid cell zones, scarcity of giant cells and in extreme cases enclosure of completely calcified foci in connective tissue capsules.

In 107 of 131 cattle infected with bovine type bacilli lesions were of types 1–3 and in 99 of 131, infected with avian type bacilli, they were of types 4–6. Lesions of type 5 appeared to be characteristic for infection with human type bacilli. The value of histological study of lesions for the identification of the type of tubercle bacillus involved was discussed.—E.G.

Bederke, G. (1960). Zur Frage der Abklärung unspezifischer Tuberkulinreaktionen mit verdünntem Rinder-Einheitstuberkulin. **[Clarification of non-specific tuberculin reactions with diluted bovine standard tuberculin.]**—Rindertuberk. u. Brucellose **9,** 173-180. **2049**

An i/d injection of diluted tuberculin containing 250 tuberculin units per 0·1 ml. induced positive reactions in all of 150 tuberculous cattle, but the reactions of 100 tuberculous cattle to 62 or 125 units revealed that these dilutions were too high. Of 200 non-specific reactors in 115 attested herds, 190 gave a negative and 10 a doubtful reaction to the injection of 250 units. These 200 non-specific reactors subsequently underwent 3 comparative tests, at intervals of at least 6 weeks, with bovine and avian tuberculins of standard strength. At the first test 20 gave doubtful reactions to bovine and 28 to avian tuberculin, but in the third test only 8 were doubtful to avian tuberculin. It was concluded that the injection of 250 tuberculin units is suitable for the clarification of non-specific reactions.—M.G.G.

Tunkl, B. & Karlović, M. (1961). O ulozi metiljavosti na pojavu senzibilizacije goveda na tuberkulin. [**Effect of fascioliasis on tuberculin sensitization in cattle.**] — Vet. Glasn. **15,** 57-60. [In Croat. Summary in English.] **2050**

On P.M. examination two cows, slaughtered because of positive tuberculin reactions, were heavily infested with liver fluke and had small focal lesions in the mesenteric lymph nodes, from which *Staph. aureus* and *Staph. albus,* but not tubercle bacilli, were isolated. Non-specific tuberculin reactions were ascribed to staphylococcal infection, resulting from damage to lymph nodes by immature flukes.—E.G.

Nicolaus, W. & Michael, F. (1961). Untersuchungen über die Anwendbarkeit von monovalenten Tuberkulinen im Rahmen der Bekämpfung der Tuberkulose des Rindes. [**Monovalent tuberculins in the control of bovine tuberculosis.**] — Rindertuberk. u. Brucellose **10,** 1-13. **2051**

As the result of evaluation of 828 intradermal tests with monovalent bovine, human and avian tuberculin, it was recommended that for the control of bovine-type TB. in cattle, the human type component should be omitted from the official German standard mammalian tuberculin and substituted by bovine tuberculin of the Vallée strain. This would not necessitate alteration of the official evaluation key.—E.G.

Mathois, H., Spadiut, H. & Stöckl, W. (1960). Über die spezifische Wirksamkeit von Tuberkulinfraktionen. II. Mitteilung: Untersuchungen an Rindern. [**Specific action of tuberculin fractions. II. Tests on cattle.**]—Wien. tierärztl. Mschr. **47,** 833-842. [Summaries in English, French and Italian.] **2052**

Fractions prepared from heated culture filtrates of human and bovine tubercle bacilli and of atypical photochromogenic mycobacteria were injected i/d into positive, negative, doubtful and non-specific reactors to standard tuberculin. Results were identical in positive and negative reactors, but the fractions provided positive reactions in newly-infected animals which failed to react to standard tuberculin. Like PPD tuberculin, these fractions failed to distinguish between non-specific and specific reactions.—E.V.L.

Rees, R. J. W. & Garbutt, E. W. (1961). **Development of immunity to tuberculosis in adult mice injected with tubercle bacilli during foetal life.** — Immunology **4,** 88-93. [Part of authors' summary.] **2053**

The immunological state of the mice exposed to mycobacteria *in utero* was determined by challenging 5 to 6 weeks after birth with either virulent or attenuated tubercle bacilli. These tests showed that an intra-embryonic injection of mycobacteria resulted in protective immunity and not tolerance. Furthermore, the mice also showed delayed-type hypersensitivity to mycobacteria.

These results are discussed in relation to the ability of other antigens to induce immunological tolerance in mice and to the response of other animal species to mycobacteria.

Viallier, J. & Cayré, R. M. (1960). Sur la relative fréquence de la tuberculose humaine à bacilles bovins. [**Relative frequency of bovine-type tubercle bacilli in man.**]—Bull. Soc. Sci. vét. Lyon **62,** 345-350. **2054**

Of 656 strains of tubercle bacilli recovered from human beings, mostly children, 32 of bovine type were identified by their virulence for rabbits; 29 were isolated from extra-pulmonary sources, and 21 of these from lymph nodes.—M.G.G.

Meissner, G. (1960). Atypische Mycobakterien. III. Mitteilung. Aviäre und avium-ähnliche Stämme. [**Atypical mycobacteria. III. Avian and avian-like strains.**] — Zbl. Bakt. I. (Orig.) **180,** 510-521. [Summaries in English, French, Spanish and Russian.] **2055**

Cultural and animal inoculation studies were made of 114 strains of avian type tubercle bacilli and of avian-like mycobacteria (culturally no different from avian type tubercle bacilli but of lower virulence, particularly for fowls). Differences were found in temp. of growth and degree of resistance to isoniazid, but these did not always correspond to differences in virulence. It was concluded that the differentiation of avian-like mycobacteria should not be attempted, and that they should be regarded simply as avian type tubercle bacilli of low virulence for fowls or other experimental animals.—M.G.G.

Mortelmans, J. (1960). Les infections à mycobactéries chez les animaux au Congo belge et au Ruanda-Urundi. [**Mycobacterial infections of animals in the Congo and Ruanda-Urundi.**] —Premier Colloq. int. sur Mycobact., Anvers 1959, pp. 130-140. Discussion: pp. 140-145. [Summaries in English and German.] **2056**

TB. and Johne's disease occur

sporadically in the Congo. TB. has been practically eradicated from dairy cattle, but in range cattle it is on the increase. It is rare in other domestic animals and in poultry. In Ruanda-Urundi, however, TB. is widespread, both in human beings and in cattle, and in some districts the incidence in cattle is over 30%. The i/d tuberculin test is suitable for dairy cattle of European breeds, but is of no great value in indigenous cattle, because of non-specific reactions.—M.G.G.

Chandler, R. L. (1961). **Greater susceptibility to Mycobacterium johnei of C.57 black mice, when compared with CBA and Swiss white mice.**—Nature, Lond. **189,** 602-603. **2057**

C.57 black mice, CBA brindle mice and Swiss white mice were inoculated i/p with 2 mg. of moist *M. johnei* in suspension in saline. Equal numbers of each strain were killed at intervals of 3, 6, 9 and 12 months; results of comparative examination showed the C.57 black mice to be markedly more susceptible to intestinal infection.—E.V.L.

Lesslie, I. W. (1960). **Purified protein derivatives prepared from non-tuberculous mycobacteria including Mycobacterium johnei.**—Premier Colloq. int. sur Mycobact., Anvers 1959, pp. 16-25. Discussion: pp. 26-34. [In English. Summaries in French and German.] **2058**

Acid-fast bacilli growing more rapidly on culture media than tubercle bacilli were isolated from 2·5% of 5,000 specimens from attested herds in Great Britain. Most of the isolates were from milk. Three species causing tuberculoid mastitis were *M. smegmatis, M. fortuitum* and *M. phlei.* Some slower growing chromogenic strains were recovered; culturally and antigenically they were like the avian type of tubercle bacillus, but they were non-pathogenic for rabbits and chickens. Cows and calves infected with cultures of *M. smegmatis, M. fortuitum* or *M. phlei* developed allergy to the homologous P.P.D. only, but in g.pigs the mean reaction to *M. smegmatis* P.P.D. did not differ significantly between animals sensitized with *M. smegmatis* and those sensitized with human or avian type tubercle bacilli. In further trials in g.pigs, *M. balnei* P.P.D. was 21·3 times as potent as human type P.P.D. in animals sensitized with *M. balnei,* and avian type P.P.D. was 6 times as potent as johnin and johnin 2·9 times as potent as avian type P.P.D. in animals sensitized with the homologous type. In calves the reactions to johnin and avian type P.P.D. were less specific.

—M.G.G.

Peckham, M. C. (1960). **Further studies on the causative organism of ulcerative enteritis.**—Avian Diseases **4,** 449-456. **2059**

Twenty strains of a Gram-positive, spore-forming rod were isolated in chick embryos from outbreaks of ulcerative enteritis in chickens, poults and quail. The disease was reproduced in quail (*Colinus virginianus*) by feeding intestinal suspension or liver from diseased birds or egg yolk cultures of the organism. Quail infected by the i/m or i/p route usually died in 1–3 days. Cultures of the organism in artificial media were not infective for quail.—M.G.G.

Nemato, H., Yokobori, H. & Azuma, R. (1961). **Studies on treatment with antibiotics of experimental acute glanders in guinea pigs.**—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 41 pp. 11-20. [In English. Summary in Japanese. Authors' summary modified.] **2060**

Bacteriostatic concentrations of chlortetracycline, oxytetracycline, dihydrostreptomycin, and chloramphenicol for cultures of *Pfeifferella mallei* were 0·75, 3·1, 3·1, and 25 μg./ml., respectively. Penicillin had no effect. In g.pigs, dihydrostreptomycin had no effect.

Oxytetracycline delayed the appearance of the Straus reaction during treatment but when administration ceased there was a recurrence.

Chlortetracycline was the most promising antibiotic for the treatment of experimental glanders.

Cohrs, P. & Schulz, L.-C. (1960). Zur Pathogenese der spontanen und experimentellen Rotlaufarthritis des Schweines. **[Pathogenesis of spontaneous and experimental swine erysipelas arthritis.]**—Mh. VetMed. **15,** 608-614. **2061**

Rheumatoid arthritis was studied in 8 pigs aged 10 weeks, injected into the anterior vena cava with 24-hour broth culture of *E. rhusiopathiae* and observed for 13 months. In addition the authors studied 14 joints from pigs with spontaneous swine erysipelas arthritis. The initial stage was characterized by slight increase in synovial fluid, hyperaemia and presence of blood plasma constituents, probably consisting of mucopolysaccharides containing hyaluronic acid. Two to six weeks after infection there was proliferation of synovial villi and thickening of the capsule. Synovial fluid was much increased and pink,

regional lymph nodes enlarged and hyperaemic. There was cell proliferation in the submesothelial vascularization zone. In the later stages villous proliferation became even more marked. There was reddish-brown discoloration of the perichondrium and sclerosis and partial necrosis of the villi. The histopathology is described in detail. Vaccinated pigs were stated to be more likely to develop arthritis.—E.G.

Skalka, B. (1960). O vlivu stáří bujonové kultury na průběh L-cyklu u Erysipelothrix rhusiopathiae. **[Influence of age of broth culture on the course of the L-cycle in Erysipelothrix rhusiopathiae.]**—Sborn. vys. Šk. zemědělsk. Brno Ser. B. **8,** 367-371. [In Czech. Summaries in German and Russian.] **2062**

The relationship between age of broth culture and capacity of *E. rhusiopathiae* to undergo a complete L-cycle *in vitro* in the presence of penicillin, was studied in 30 strains. The optimal age of culture for completion of the whole cycle appeared to be when growth was at its most vigorous and the majority of bacteria were young and of high vitality. The L-cycle was not regarded as a sign of degeneration but as a morphological adaptation of bacteria to unfavourable conditions.—E.G.

Osebold, J. W. & Njoku-Obl, A. (1961). **Interaction between phagocytes and Listeria monocytogenes in vitro.** — Fed. Proc. **20,** No. 1 Pt. 1 p. 266. [Authors' abst. modified.] **2063**

Cellular immunity was studied utilizing *L. monocytogenes* and phagocytic cells from sheep. Plastic culture chambers were used. Four host-parasite combinations were studied: normal cells-normal serum, normal cells-immune serum, immune cells-normal serum, and immune cells-immune serum. During the first 2 hours of interaction all combinations manifested bactericidal effect on the parasite since 57 to 91% of the bacterial inoculum was not recoverable at that time. Samples were taken 4 times during a 22 hour period of interaction. As time increased, divergence of pattern in the host-parasite systems became apparent, wherein the immune cell-immune serum combination reacted differently. The proportion of cells surviving at the terminal examination was about 60% in the immune cell-immune serum combination while the other 3 combinations had an average of about 10% survivors. Bacterial growth was suppressed in the immune cell-immune serum combination since maximum increase obtained was 13-fold, while 2,000-fold increases were reached in the other systems. Altered cellular activity may be an important factor in resistance to *L. monocytogenes.*

Krauss, H. & Hensel, L. (1961). Pseudotuberkulose bei Enten. **[Pasteurella pseudotuberculosis infection in ducks.]** — Dtsch. tierärztl. Wschr. **68,** 144-146. [Summary in English.] **2064**

An account of infection in 7 of 14 ducklings on a farm. Pasteurella was isolated from the liver of one which had died and two which had been slaughtered. Mice succumbed within 48 hours after i/p inj. with culture suspension. Details were given of chlortetracycline treatment in the four survivors.—E.G.

Marshall, J. D., Jr., Hansen, P. A. & Eveland, W. C. (1961). **Histobacteriology of the genus Pasteurella. I. Pasteurella anatipestifer.** —Cornell Vet. **51,** 24-34. [Authors' summary modified.] **2065**

*Past. anatipestifer* was identified by the fluorescent antibody technique in smears of exudate and in tissue sections. The tissue responses elicited by this organism were differentiated from those due to other causes.

Joubert, L., Courtieu, A.-L. & Oudar, J. (1960). Pneumonie enzootique du porc à Bordetella bronchiseptica. **[Endemic pneumonia in pigs caused by Haemophilus bronchisepticus.]**—Bull. Soc. Sci. vét. Lyon **62,** 329-344. **2066**

In a herd of 300 pigs 90 died from endemic pneumonia in 2 years. Young animals in particular were affected. *H. bronchisepticus* was isolated regularly from pigs that died, and specific antibodies were demonstrated in the serum of sick and recovered pigs. The properties of the organism were studied. It had no effect when injected into 4 healthy laboratory pigs, but caused pulmonary symptoms and death when given intratracheally to 2 pigs from the affected herd. It also caused lung lesions and death in mice and g.pigs. A vaccine prepared from it did not reduce the incidence of the disease. Attempts to demonstrate a virus by inoculation of pigs and embryonated eggs with filtrate of affected lung were unsuccessful. The disease was finally controlled by antibiotic and sulphonamide treatment and

vaccination together with supplementation of the diet with vitamin A and trace elements. It was concluded that nutritional deficiencies had predisposed the pigs to the disease. Symptoms of whooping-cough developed in 3 children on the farm, although no outbreak of this disease had been reported in the district, and the watch-dog had a benign pulmonary affection.—M.G.G.

Biberstein, E. L. & Gills, M. (1961). **Catalase activity of Haemophilus species grown with graded amounts of hemin.**—J. Bact. **81,** 380-384. [Authors' summary modified.] **2067**

Quantitative catalase tests on 14 strains of *Haemophilus* (including strains from farm animals) cultivated with graded amounts of haemin revealed the following. *Haemophilus influenzae* increases in catalase activity as the concentration of haemin in the medium is increased. The amount of haemin required for growth is considerably lower than that necessary for demonstrable catalase activity. Other members of the genus which do not require haemin for growth require it for catalase synthesis. A third type of haemophilus is capable of haemin synthesis to varying degrees, and a fourth type, though incapable of catalase synthesis with or without added haemin, does not require that substance for growth.

Rampon, R. (1960). Étude de 13 souches de Moraxella isolées chez les animaux. **[Study of 13 strains of Moraxella isolated from animals.]**—Arch. Inst. Pasteur Algér. **38,** 243-251. **2068**

The morphology, serology, cultural and biochemical properties, sensitivity to antibiotics, and pathogenicity for lab. animals and pigs were studied in 4 strains of *M. duplex* var. *non liquefaciens* isolated in pure culture, 3 from the bone marrow of pigs and one from the bile of a dog; 8 strains of *M. lwoffi* var. *non liquefaciens,* 5 from pigs, 2 in association with pathogenic bacteria from mastitis in cows, and one from a white mouse; and one strain of *M. glucidolytica* var. *non liquefaciens* isolated from the urine of a cow with haematuria associated with a pyocyanic bacillus. No strain was pathogenic. The antigenic properties did not correspond with the classification according to the cultural and biochemical properties.—M.G.G.

Greuner, H.-E. (1961). Einige Literaturbetrachtungen sowie Praxisbeobachtungen zur Oedemkrankheit der Schweine. **[Oedema disease in pigs—review of the literature and observations in practice.]**—Mh. VetMed. **16,** 137-140. **2069**

G. reviewed the literature and discussed clinical symptoms of oedema disease, seen in 147 pigs. Treatment with antibiotics and sulphonamides failed. Better results were obtained with i/m doses of 150–300 mg. of vitamin E, small doses of sodium sulphate and circulatory stimulation with caffein, strophantine, etc. Dietary supplements of calcium, trace elements and vitamins, and maintenance of the correct carbohydrate protein ratio, were recommended. Details were given of experimental vaccination with 2 s/c doses at an interval of two weeks, of 5 ml. of a herd-specific *E. coli* vaccine.—E.G.

Gregory, D. W. (1960). **The (oedema disease) neuro-oedema toxin of haemolytic Escherichia coli.**—Vet. Rec. **72,** 1208-1209. **2070**

Literature consulted revealed a similarity between the effects, in experimental animals, of the neurotoxin of *Shigella dysenteriae* (*B. shigae*) and those produced by i/v injection of extracts of oedema disease bowel or of certain haemolytic strains of *E. coli.* In a study of oedema disease an extract of infective intestinal contents was precipitated with trichloracetic acid or ammonium sulphate, re-suspended in 1% $Na_2$ $PO_4$ and injected i/v into 2 weanling pigs, causing typical oedema disease. I/v inj. of extracts of cultures of a haemolytic strain of *E. coli* (0139 : K82 (B) H1, isolated from a pig that had died of oedema disease) or precipitates of the extracts caused typical oedema disease in young pigs. Ammonium sulphate is rapidly lethal for pigs and should, therefore, be removed from the re-suspended precipitate before inj. Results are taken to indicate that the disease-producing substance elaborated by certain haemolytic *E. coli* serotypes is a protein or is closely associated with a protein and may be similar to the neurotoxin of *Shigella dysenteriae.*—T.E.G.R.

Taylor, J., Wilkins, M. P. & Payne, J. M. (1961). **Relation of rabbit gut reaction to entero-pathogenic Escherichia coli.**—Brit. J. exp. Path. **42,** 43-52. [Authors' summary modified.] **2071**

Ligated loops of rabbit gut were used to test strains of *E. coli* for their ability to cause dilatation. It was found that strains which caused infantile enteritis caused dilatation, but strains causing human urinary infection did

not. For human strains a positive gut test is not a test for general pathogenicity, but for the ability to cause diarrhoea, probably as the result of ability to produce some toxic substance. Some strains from calf scours caused dilatation, but the correlation was not absolute possibly because some had been kept in subculture for years and possibly because the pathological processes in this disease which is accompanied by septicaemia, are different from those in infantile enteritis, in which the infection is localized to the gut. Strains of *E. coli* associated with swine enteritis and swine oedema were without effect, as were *E. coli* serotypes which cause infantile diarrhoea, but which had been isolated from well water.

Active immunization of the rabbit gave partial and passive immunization complete protection, against the homologous serotype, but no protection against different serotypes.

Lovell, R. & Rees, T. A. (1960). **A filterable haemolysin from Escherichia coli.**—Nature, Lond. **188,** 755-756. **2072**

Four strains of *E. coli* were grown in a medium consisting of infusion broth, and lean beef that had been boiled in N/20 sodium hydroxide soln. Haemolysin was demonstrated in filtrates from cultures 4–24 hours old, with the highest titre in cultures 6–10 hours old. The haemolysin was destroyed by heating and could be removed from the filtrate by 30% ammonium sulphate soln.—M.G.G.

Thomas, S. B., Druce, R. G. & Elson, K. (1960). **An ecological study of the coli-aerogenes bacteria of surface soil.**—J. appl. Bact. **23,** 169-184. **2073**

The authors investigated the incidence of the different types of coli-aerogenes bacteria in the surface soil of a heavily grazed pasture (polluted site) and an ungrazed upland forestry enclosure (relatively unpolluted site), with the object of comparing primary isolation on a solid selective medium at 30° and 37°.—R.M.

Young, V. M., Sochard, M. R. & Gillem, H. C. (1960). **Infectious agents in infant diarrhea: I. A hemagglutination-inhibition procedure for detection of bacterial fractions in infant sera.**—Proc. Soc. exp. Biol., N.Y. **105,** 635-638. **2074**

Young, V. M., Sochard, M. R., Gillem, H. C. & Ross, S. (1960). **Infectious agents in infant diarrhea : II. Serological reactions with Escherichia coli 01 through 025.**—Ibid. 638-642. [Authors' summaries modified.] **2075**

I. A haemagglutination-inhibition test for infant diarrhoea is described. The inhibitors appear to be antigenically related to and possibly derived from bacteria isolated from the faeces.

II. A study was made of the immunological sequence of events in diarrhoea associated with *E. coli* serotype 01–025 in the intestinal tract. The sera of 12 of 30 infants in the acute or convalescent phase exhibited a rise in haemagglutinin titre. Of 21 sera with no haemagglutinins in the acute phase 14 had inhibitors which were antigenically related to the *E. coli* serotype isolated from the faeces.

Hammer, D. (1961). Die Entwicklung der Salmonellose bei Haustieren in Baden unter Berücksichtigung gesicherter Infektketten. **[Epidemiology of salmonella infections in domesticated animals in Baden.]** — Berl. Münch. tierärztl. Wschr. **74,** 64-70. [Summary in English.] **2076**

In Baden 1,203 salmonella strains of 37 serotypes (excluding *S. pullorum* and *S. abortus-ovis*) were isolated from domestic animals, animal products and animal feeding-stuffs from 1954 to mid-1960; 961 of the strains were isolated in the last 2½ years of the period. *S. typhi-murium* (441 strains), *S. cholerae-suis* var. *kunzendorf* (194) and *S. blockley* (143) were the 3 commonest serotypes. From 1958 there was a sharp increase both in the number of isolates and in the number of serotypes. Pigs and fowls were the most important sources. The principal origin of salmonella appears to be imported feeding-stuffs. These infect livestock, which in turn infect butchers and others engaged in the preparation of food for human consumption. Animals derive infection from man through uncooked kitchen waste and sewage. —M.G.G.

Rutqvist, L., Thal, E., Petrelius, T. & Swahn, O. (1961). Salmonella cholerae suis-infektion och nitrofurazonbehandling. Bidrag till kännedom om svinsalmonellosen som besättnings-siukdom och livsmedelshygieniskt problem. **[Salmonella cholerae-suis infection and treatment with nitrofurazone.]** — Nord. VetMed. **13,** 3-19. [In Swedish. Summaries in English and German.] **2077**

An outbreak of infection in a piggery housing 1,500 animals was investigated. Oral

treatment with nitrofurazone improved the clinical state of affected animals, but even prolonged treatment did not prevent apparently healthy pigs from carrying the organism. In healthy carriers, *S. cholerae-suis* was most often isolated from the digestive tract (particularly mesenteric lymph nodes) and liver; it was rarely recovered from faeces. Agglutination tests on sera were performed with H and O antigens of *S. cholerae-suis*; positive reactions were not related to the bacteriological status of a given pig. The infection was eradicated by vigorous hygienic measures, which are described.

—R.M.

Stasilevich, Z. K. (1961). **[Experimental salmonellosis in monkeys.]** — J. Microbiol., Moscow No. 2 pp. 70-74. [In Russian. Summary in English.] **2078**

*S. enteritidis* was isolated from the intestine of a lab. monkey and 40 monkeys were infected experimentally with this strain. Clinical and pathological findings were described. Treatment with a combination of levomycetin (chloramphenicol) and streptomycin was effective. [An English translation will appear in *J. Microbiol. Epidem. Immunobiol.* **32,** No. 2.]—R.M.

Jameson, J. E. (1961). **A study of tetrathionate enrichment techniques, with particular reference to two new tetrathionate modifications used in isolating salmonellae from sewer swabs.**—J. Hyg., Camb. **59,** 1-13. [Part of author's introduction.] **2079**

Modern techniques for isolating salmonellae are efficient and simple when applied to faeces. With other materials, such as foodstuffs, bone meals and sewer swabs, complicated procedures, usually more costly in time and media, are used. The author set himself the task of looking for a less laborious, but not less efficient, procedure for isolating salmonellae from these other materials.

Holme, T. & Edebo, L. (1961). **Preparation of biologically active fractions of Salmonella typhimurium. 1. Cultivation methods.**—Acta path. microbiol. scand. **51,** 164-172. **2080**

Edebo, L. & Holme, T. (1961). **Preparation of biologically active fractions from Salmonella typhimurium. 2. Disintegration of pathogenic micro-organisms.** — Ibid. 173-178. [In English. Authors' summaries modified.] **2081**

I. No significant difference could be noted in virulence for mice or toxicity between cells killed by formalin after growth in simple synthetic media or in complex media whether in the logarithmic phase or the stationary phase. Nor did increased aeration efficiency influence significantly the toxicity of the cells.

In cultures of *S. typhi-murium*, a considerable increase in the yield of cellular material in simple synthetic media could be achieved by using appropriate aeration and pH-control. In a medium containing glucose, lactate and inorganic salts a yield of 10·2 g. dry weight of cells per litre (corresponding to a population density of about $10^{11}$ cells per ml.) was obtained in 2-litre shake cultures with active aeration. A simple continuous culture apparatus for culture volumes up to one litre has been developed.

II. A disintegration method for pathogenic micro-organisms has been developed. The micro-organisms are pressed in the frozen state at about – 12°C. and 1000 atm. through canals 4 to 5 mm. wide. The material need not be thawed during the whole disintegration procedure. Preparations with good biological activity have been obtained.

van Dorssen, C. A. (1961). **Over het voorkomen van Salmonella pullorum type II. [Occurrence of Salmonella pullorum Type II.]**—Tijdschr. Diergeneesk. **86,** 414-426. [In Dutch. Summaries in English, French and German.] **2082**

By the classification of A. Lucas *et al.* [*Rec. Méd. vét.* **127,** 547 (1951)], type II differs biochemically from types I, III and IV by failing to ferment (within 24 hours) maltose, xylose and rhamnose; and by fermenting mannose without forming gas. Van Dorssen examined 7 strains of Type II. Four were isolated in Belgium and 3 from chicks aged 14–21 days in Limburg province of the Netherlands, near the Belgian border. Experiments showed that the type caused diarrhoea in adult fowls as well as in chicks.

—R.M.

Harvey, R. W. S. & Phillips, W. P. (1961). **An environmental survey of bakehouses and abattoirs for salmonellae.**—J. Hyg., Camb. **59,** 93-103. [Part of authors' summary.] **2083**

Of 274 swabs from gullies in abattoirs, 111 were positive for salmonella (40·5%). Twenty-one different serotypes were isolated. Seventeen of these serotypes are known to occur in animal feedingstuffs.

Parallel examination of abattoir swabs and excreta from human infections for *S. typhi-*

*murium*, coupled with phage-typing of the strains, provided information of the geographically local nature of much sporadic illness due to this serotype. Of a total of 30 typable strains, 23 belonged to phage-types found in the abattoirs, or on local farms. Sporadic incidents were represented by 25 of these cultures, 18 of which corresponded in phage-type to those found in the abattoirs or in local farm animals. The phage-types of *S. typhi-murium* isolated from the slaughter houses not infrequently corresponded in timing with the strains isolated from human infections.

Anon. (1961). **Infection from poultry.** — Lancet, January 7th, 38. **2084**

An outbreak of enteritis due to *Salmonella typhi-murium* in an institution was attributed to the consumption of egg-nog (a drink containing raw egg). Of 5,050 hens in the flock supplying the eggs, 94 were serologically positive for *S. typhi-murium* infection. Three of 1,117 eggs from 29 of these reactors yielded the organism. Attention was drawn to the danger in the consumption of raw egg, and also in the practice of using the same antibiotic for improving the growth of poultry and for preserving the carcasses, which may be infected with resistant salmonella. [See also *V.B.* **31,** 1288.]

—M.G.G.

Morales, J. R. (1960). La infección brucelósica en los tambos que abastecen la ciudad de La Plata. **[Brucella infection in dairy herds in La Plata, Argentina.]**—Rev. Fac. cienc. vet. La Plata **2,** No. 4 pp. 25-27. **2085**

Of 469 samples of churn milk from herds supplying La Plata, 75·5% were positive and 4% doubtful to the ring test.—M.G.G.

Bisping, W. (1960). Die serodiagnostische und epidemiologische Bedeutung der Bakteriotropine bei der Rinderbrucellose. **[Diagnostic and epidemiological importance of bacteriotropins in bovine brucellosis.]** — Dtsch. tierärztl. Wschr. **67,** 639-645. [Summary in English.] **2086**

Huddleson's opsonin test was performed on 235 sera from cattle in infected, uninfected, and vaccinated herds, and an opsonin test that uses, instead of citrated blood, serum to which 0·5% phenol has been added, was performed on 556 such sera. The two methods gave similar results, but the phenol test was more sensitive, and also more convenient, since it did not require citrated blood. Comparison of the results with those of the agglutination test revealed that the opsonin tests indicated recent infection earlier than the agglutination test and were more sensitive, since many animals in infected or vaccinated herds that had an opsonin index of over 10 were doubtful or negative to the agglutination test, while no animal with an agglutination titre of 1 : 20 or over had an opsonin index lower than 10. In unvaccinated herds free from brucellosis, no animal had an opsonin index greater than 10.—M.G.G.

Preuss, B. (1961). Ein Beitrag zur praktischen Durchführung der Kannenmilchuntersuchungen auf Abortus Bang. **[Examination of churn milk samples for brucellosis.]** — Mh. VetMed. **16,** 104-107. **2087**

Details were given of the ring test in 180,000 churn samples from 58 dairies, between April 1959 and July 1960 in East Germany.—E.G.

Seelemann, M., Czernicki, B., Meyer, A. & Klepp, J.-L. (1960). Antikörper bei Brucellose unter besonderer Berücksichtigung verschiedener Immunisierungsverfahren. II. **[Antibodies in brucellosis with special reference to the method of immunization. II.]**— Rindertuberk. u. Brucellose **9,** 181-208. **2088**

The opsonin titre, agglutination titre, Meinicke's flocculation test titre, and blood serum content of albumin and globulins were followed in 40 calves immunized with single or multiple doses of living Strain 19, Sielbeck's killed adsorbed vaccine, or a killed acetone-adsorbed vaccine prepared by the authors from Strain 19. There were no great differences in the effects of the different vaccines. Agglutination titres rose 3–4 days after vaccination and reached a peak in 2–4 weeks, whereas opsonin titres rose after 1–2 weeks and reached a peak in 6–8 weeks. No increase in $\gamma$ globulins due to immunization was observed. It was concluded that vaccines against brucellosis could probably not be evaluated by opsonin titres and electrophoresis of the blood serum. [See also *V.B.* **31,** 345.]

—M.G.G.

Wolf, B. & Live, I. (1961). **Blocking type agglutinins in neonatal rats resulting from injection of adult rat splenic cells sensitized in vitro with brucella antigen.**—Fed. Proc. **20,** No. 1. Pt. 1 p. 25. [Authors' abst. modified.] **2089**

Isolated splenic cells from rats, sensitized *in vitro* with extracts of *Brucella abortus*,

brought about blocking-type antibody formation in homologous new-born rats: the cells were injected intraperitoneally and the recipients were exsanguinated in 6–8 days. Although serial serum dilutions revealed no antibody on incubation at 37°C. for 2 days, agglutinins were demonstrable after centrifugation at 3,500 r.p.m. for 30 min. (titres 1 : 80–1 : 160). Coombs' anti-globulin test was performed on the same sera with positive results, which further confirmed the presence of blocking antibody. Agglutinins were also detectable in haemagglutination tests, in which tanned erythrocytes coated with brucella extracts were used. No antibodies were demonstrable in the sera of litter mates injected with identically treated sonically disrupted leucocytes.

Pavlov, P., Tchilev, D., Mateev, M., Milanov, M., Tatarov, B. & Krastev, V. (1960). Recherches sur des réservoirs de Brucella chez le porc vivant en liberté. **[Reservoirs of brucella infection in pigs on free range.]**—Bull. Off. int. Epiz. **53,** 1511-1526. [Summaries in English and Spanish.] **2090**

In Bulgaria, from 1954 to 1959, brucellosis was demonstrated serologically in 5·5% of 256,217 pigs in the Bourgas district and in 13% of 147,115 pigs in the Varnas district. Most of the pigs were on free range. Of 514 hares captured in these 2 districts, 3 were serologically positive for brucellosis, and 8 doubtful; of 440 foxes, 16 were positive and 6 doubtful; and of 829 dogs, 51 were positive and 18 doubtful. Fourteen strains of *Br. suis* were isolated: 3 from dogs, one from a fox, one from a wild sow, and 9 from ticks (*Hyalomma plumbeum* and *Dermacentor marginatus*) obtained from wild animals. *Br. suis* infection was transmitted to g.pigs by adults and nymphs of these 2 species of ticks that had fed on infected g.pigs as larvae. Rabbits and dogs infected experimentally with *Br. suis* in the food yielded the organism 1–2 months later. Six roe-deer, 49 wild rats, 4 jackals, 208 tortoises and 63 wild birds were negative for brucellosis.—M.G.G.

Bühlmann, X., Vischer, W. A. & Bruhin, H. (1960). Verwendung von Phenazin-Farbstoffen für die Differenzierung zwischen Brucella suis Traum und Brucella suis Thomsen. **[Phenazine dyes for the differentiation of Brucella suis Traum and Br. suis Thomsen.]** —Zbl. Bakt. I. (Orig.) **180,** 327-334. [Summaries in English, French, Spanish and Russian.] **2091**

Sixteen strains of Thomsen's type were differentiated from 6 strains of Traum's type and 5 strains of other brucella types by their high sensitivity to phenazine dyes.—M.G.G.

Entel, H. J. (1961). Zur Frage der Brucella-melitensis-Infektionen bei Milchkühen in Schleswig-Holstein und ihrer milch- und fleischhygienischen Bedeutung. **[Brucella melitensis infection in dairy cows in Schleswig-Holstein with regard to milk and meat hygiene.]** — Rindertuberk. u. Brucellose **10,** 34-44. **2092**

Brucella organisms were isolated from udder, milk, and the mammary lymph nodes, but not from other organs of 6 of 8 cattle slaughtered because of positive serological reactions. The 12 strains isolated had certain biochemical and serological characteristics in common with both *Br. melitensis* and *Br. abortus*. Public health aspects with reference to milk and meat hygiene were discussed. —E.G.

Cherchenko, I. I. (1961). **[Brucellosis in the Far North. I. In reindeer.]**—J. Microbiol., Moscow No. 3 pp. 135-138. [In Russian. Summary in English.] **2093**

C. discussed previous Russian publications on this subject and gave the results of investigations in the Yakut area. High agglutinin titres were found in 28 of 54 reindeer. Attempts to isolate the organism from blood failed. [An English translation will appear in *J. Microbiol. Epidem. Immunobiol.* **32,** No. 3.]—R.M.

Ulbrich, F. & Heuner, F. (1960). Der Wert typenspezifischer Brucellaantigene für die Serodiagnose der Brucellose. **[Value of type-specific Brucella antigens for serological diagnosis.]** — Berl. Münch. tierärztl. Wschr. **73,** 421-424. [Summary in English.] **2094**

The agglutination test was performed on 3,500 sera from cattle, sheep, pigs, and human beings, using antigens prepared from 2 strains of *Br. melitensis* and one each of *Br. abortus* and *Br. suis*. Mixtures of antigens were not superior to *abortus* antigen alone. One of the *melitensis* antigens ("Jettenbach") gave more positive and doubtful reactions than any other antigen.—M.G.G.

Zaĭtseva, A. I. (1961). **[Efficacy of therapeutic brucella vaccine prepared on media containing yeast autolysate.]**—J. Microbiol., Mos-

cow No. 1 pp. 107-110. [In Russian. Summary in English.] **2095**

Vaccines for treatment of human infections were prepared from mixed cultures of *Br. melitensis, abortus* and *suis*. A culture medium made up from 300 ml. yeast autolysate, 700 ml. tap water, 5 g. lactic acid, 10 g. glycerin, 5 g. NaCl, 40 g. agar at pH 6·6 was considered to be cheaper and better than liver agar with glucose and glycerin. [An English translation will appear in *J. Microbiol. Epidem. Immunobiol.* **32,** No. 1.]—R.M.

Lazuga, K. & Renoux, G. (1960). Quelques essais sur les bactériophages des Brucella. **[Studies of brucella bacteriophages.]**—Arch. Inst. Pasteur Tunis **37,** 447-452. **2096**

Tables show the action of 23 phages on 376 brucella strains. Studies of the critical dilution of 8 phages tested on 5 brucella strains revealed that the activity of certain phages was specific. Typing of brucella by phages is therefore considered to be possible. —M.G.G.

Vershilova, P. A. & Chernysheva, M. I. (1961). **[Defensive function of the local inflammatory lesion caused by live vaccines. I.]**—J. Microbiol., Moscow No. 1 pp. 60-64. [In Russian. Summary in English.] **2097**

The inflammatory lesion produced by s/c inj. of live tularaemia vaccine rendered g.pigs resistant to s/c inj. of virulent *Br. melitensis* or *Br. abortus* 1 day later. There was little increased resistance at 5 and 15 days after immunization.—R.M.

Sleight, S. D. & Williams, J. A. (1961). **Transmission of bovine leptospirosis by coition and artificial insemination—A preliminary report.** — J. Amer. vet. med. Ass. **138,** 151-152. [Authors' summary.] **2098**

A *Leptospira pomona*-infected bull transmitted leptospirosis to 2 of 8 heifers. One heifer became infected by intravaginal inoculation of diluted semen and the other by a single natural service. Leptospires were isolated from the semen of the infected bull.

Kemenes, F. & Szemerédi, G. (1961). **Epizootiological aspects of porcine abortion due to Leptospira pomona in Hungary.**—Acta vet. Acad. Sci. hung. **11,** 1-12. [In English.] **2099**

The authors concluded from observations in 32 farms that sows abort from *L. pomona* infection only if they become infected in the second half of pregnancy. Such abortions can be avoided if pregnant sows are separated from the herd and transferred to clean farrowing pens at the correct time.—M.G.G.

Pande, P. G., Sekariah, P. C. & Shukla, R. R. (1961). **Examination of Leptospira pomona by gel diffusion.**—Nature, Lond. **189,** 511-512. **2100**

The authors described the results of an antigenic analysis of the 4 sub-serotypes of *L. pomona,* attempted by diffusion of antigens and antibodies in agar.—E.V.L.

Soloshenko, I. Z. & Khorava, G. V. (1961). **[Role of cattle in the epidemiology of icterohaemorrhagic leptospirosis.]**—J. Microbiol., Moscow No. 2 pp. 79-80. [In Russian.] **2101**

A serological survey of 179 cattle was done in connexion with human infection in the Abkhaz A.S.S.R. Titres positive to *L. icterohaemorrhagiae* at between 1 : 400 and 1 : 12,800 were found in 5 of 40 calves, 13 of 24 heifers, 72 of 98 cows and 2 of 17 oxen. In addition a cow and an ox gave positive titres to *L. pomona* antigen. Microscopic examination of urine from 122 cattle gave negative results. [An English translation will appear in *J. Microbiol. Epidem. Immunobiol.* **32,** No. 2.]—R.M.

Lebeda, M. (1960). Příspěvek k otázce účinnosti vakcin z koncentrovaných kultur Lept. icterohaemorrhagiae. **[Vaccines from concentrated cultures of L. icterohaemorrhagiae.]**—Sborn. vys. Šk. zemědělsk. Brno Ser. B. **8,** 221-233. [In Czech. Summaries in English and Russian.] **2102**

From experiments in g.pigs with trypaflavine vaccines, prepared from either whole *L. icterohaemorrhagiae* culture or from supernatant fluid or sediment after centrifugation of culture, it was concluded that even after removal of practically all leptospira organisms from culture, a considerable amount of antigen was retained in the medium in which cultures had been allowed to grow for 10–14 days. —E.G.

Lyubashenko, S. Y. [Edited by.] (1961). **[Leptospirosis of farm animals: abstracts of nine original papers submitted for publication.]**—Veterinariya, Moscow No. 2 pp. 48-53. [In Russian.] **2103**

The papers covered the following topics :— differential diagnosis of leptospirosis and atypical cow pox (V. M. Chaĭkovskii); outbreaks of porcine leptospirosis, with involvement of cattle on the same farms (V. G.

Romanenko and G. G. Bedenashvili); equine infection in the Tatar Republic (Z. K. Karimova); canine infection in the Abkhaz Republic (G. V. Khorava); survival of laboratory strains (N. I. Dubakin); mode of entry of *L. monyakov* [*L. pomona*] into the body (V. M. Kruglikov and others); experimental infection of frogs and their role as carriers of infection (M. V. Zemskov and others).

The aetiology of infections of farm animals in the Primorsk Territory was studied by B. V. Vysotskii and others: they found leptospira antibodies (to any of 7 serotypes) in one-fifth of over a thousand cattle, and identified *L. ussuri* for the first time in that Territory. Of 16 cats, one was positive to *L. grippo-typhosa* antigen (1 : 1,000) and another to L. canicola (1 : 6,400).—R.M.

Marmalevskaya, L. Y. & Blagoveshchenskii, V. A. (1961). **[Purification of Cl. welchii toxoid by precipitation with alcohol or acetone.]**—J. Microbiol., Moscow No. 1 pp. 110-113. [In Russian. Summary in English.] **2104**

The authors adapted to *Cl. welchii* the method described by L. Pillemer and others [*J. exp. Med.* **88,** 205 (1948)].—R.M.

Rossdale, P. D. & Scarnell, J. (1961). **Immunisation of the new-born foal against tetanus.**—Vet. Rec. **73,** 184-185. **2105**

Four mares were immunized against tetanus both at 2 months and at one month before foaling. In 3 of the 4 foals the tetanus antitoxin content of the serum was well above 0·1 i.u. per ml. for several months after birth. The fourth foal, which was deprived of colostrum, had less than 0·1 i.u. per ml., although it was given 1,500 i.u. of antitoxin on the 7th day of life. Four new-born foals from non-immunized dams were given 1,500 i.u. of antitoxin and bled at intervals. Only one blood sample had more than 0·1 i.u. of antitoxin per ml.—M.G.G.

Skulberg, A. (1961). **Botulism in mink caused by Clostridium botulinum Type E.**—Nord. VetMed. **13,** 87-95. [In English. Summaries in German and Norwegian. Author's summary modified.] **2106**

An outbreak was attributed to fish. Of 631 animals exposed to the toxin, 606 died.

Small quantities of toxin were demonstrated in the incriminated ration and in a sample of the fish used in the feed. A toxigenic strain of *Cl. botulinum* Type E was isolated from the feed.

Miller, V. A. & Jensen, R. (1961). **Experimental immunization against ovine vibriosis. I. The use of live and formalin-killed Vibrio fetus vaccines.**—Amer. J. vet. Res. **22,** 43-46. **2107**

Of 68 ewes given 2 s/c doses of 5 ml. of living *V. fetus* culture before mating, 44 were challenged at the beginning of the 5th month of gestation by oral infection or contact with aborting ewes. None of the 68 aborted. Of 48 ewes given before mating 2 s/c doses of 5 ml. of *V. fetus* culture killed by formol, and exposed in the 5th month, 7 of 25 aborted after oral challenge and one of 23 aborted after exposure to aborting ewes. In the control groups, 21 of 25 unvaccinated ewes aborted after oral challenge and 8 of 21 after exposure to contact infection.—M.G.G.

Söderlind, O. (1961). Serologische Differenzierung von Vibrio-fetus-Stämmen. **[Serological differentiation of Vibrio fetus strains.]**—Mh. Tierheilk. **13,** 42-47. **2108**

Details were given of a study by the agglutination method described by Brinley Morgan [*V.B.* **29,** 2757] of 51 strains of *V. fetus,* classified by the method of Mitscherlich and Liess [*V.B.* **29,** 1015] and Kamel, M. H. (1960) as Type I, II and VII. Of the 51 strains 47 belonged to Type I and II. In 30 of the 47, differentiation by the agglutination method into two groups, equivalent to Type I and II, was possible. The remaining 17 were not typable by agglutination but by the c.f. test. The four remaining strains of Type VII did not react with strain-homologous sera.—E.G.

Lebeau, M. A. (1960). Un curieux cas de rhinite hémorragique et purulente unilatérale chez un chat adulte. **[Rhinitis caused by Fusiformis ramosus in a cat.]** — Bull. Soc. vet. prat. **44,** 220-222. **2109**

An account is given of a cat, aged 7 years, with rhinitis characterized by a discharge which was purulent at times and haemorrhagic at others. The disease did not respond to antibiotics or aerosols. *Fusiformis ramosus* was isolated from the pus.—T.E.G.R.

Glovatskaya, M. G. (1961). **[Combined vaccine for active immunization against tetanus and leptospirosis. I.]**—J. Microbiol., Moscow No. 2 pp. 107-110. [In Russian. Summary in English.] **2110**

Five groups each of 25 rabbits were

inoculated twice with either (1) crude tetanus toxoid, (2) crude tetanus toxoid mixed with formolized leptospirosis vaccine, (3) adsorbed, purified tetanus toxoid, (4) adsorbed toxoid mixed with leptospirosis vaccine, (5) leptospirosis vaccine.

Formation of tetanus antitoxin and leptospirosis antibodies was not reduced, and was even slightly increased, when the two products were given at the same time. [An English translation will appear in *J. Microbiol. Epidem. Immunobiol.* **32,** No. 2.]—R.M.

Kolumbić, T. & Horvat, J. (1961). Neka zapažanja u vezi bakterijskih septikemijskih oboljenja teladi. **[Bacterial septicaemic diseases in calves.]**—Vet. Glasn. **15,** 145-147. [In Croat.] **2111**

From 56 calves four days to three months old, which had died of various diseases, the following bacteria were isolated: *Escherichia coli* and *Streptococcus pneumoniae* nine times each, unspecified micrococcus species four times, *Pseudomonas pyocyanea* and *Bacillus anthracis* twice each, *Corynebact. pyogenes* once and proteus once, and 19 were bacteriologically sterile.—E.G.

Rafyi, A. (1960). Les maladies causées par Clostridium perfringens et Cl. novyi. **[Diseases caused by Clostridium welchii and oedematiens.]**—Bull. Off. int. Epiz. **54,** 148-163. [Summaries in English and Spanish.] **2112**

Diseases caused by *Cl. welchii* are briefly reviewed. In Iran, where Types B and D occur, enterotoxaemia is an ever-present menace to sheep and goats; Type B is antigenically different from the classical Type B. Systematic inoculation with a polyvalent vaccine consisting of a total culture of Types B, C and D is practised, with good results. Further research in the Near East is advocated.—T.E.G.R.

Liebermann, H., Müller, M. & Heinke, I. (1960). Infektiöse Abortursachen beim Rind in Mecklenburg. **[Infectious causes of abortion in cattle in Mecklenburg.]** — Mh. VetMed. **15,** 807-810. **2113**

Of 189 foetuses aborted by cattle in Mecklenburg from January 1959 to January 1960, 50 yielded brucella, 8 *Escherichia coli,* 5 *Vibrio fetus,* 3 *Corynebacterium pyogenes,* 2 *Salmonella dublin* and one *S. simsbury,* 2 *Aspergillus fumigatus,* one *Listeria monocytogenes* Type IV, one atypical corynebacterium, and one streptococci Group C. Of 51 placentas sent with the foetuses, 11 yielded streptococci, 8 brucella, 3 *S. dublin,* 2 *E. coli,* one shigella and one atypical corynebacterium. —M.G.G.

Rampon, R. & Barbesier, J. (1960). I. Contribution à l'étude bactériologique de laits de vaches atteintes de mammite en Algérie (1955-1959). II. Flavobacterium isolés de laits de vaches atteintes de mammites. **[I. Bacteriology of milk from cows with mastitis in Algeria. II. Flavobacteria from milk of cows with mastitis.]** — Arch. Inst. Pasteur Algér. **38,** 216-221 & 237-242. **2114**

Of 540 samples of milk taken between 1955 and 1959 from cows with mastitis in Algeria, 297 (55%) yielded a single organism, 108 (20%) yielded 2 or more organisms, and 135 were negative. Of the 297 strains isolated in pure culture, 119 were *Streptococcus,* 87 *Staphylococcus,* 61 *Escherichia coli,* 8 *Bacterium friedländeri,* 7 *Candida* spp., 6 *Pseudomonas pyocyanea,* 3 *Corynebacterium pyogenes,* 3 *Proteus vulgaris,* 2 *Flavobacterium,* and one was *Nocardia.* Acid-fast bacilli were seen in 32 of the samples; 30 of these were negative in ordinary culture media.

Seven strains of *Flavobacterium* were isolated from mastitis milk, 2 in pure culture, and 5 in association with pathogenic bacteria. They were classified according to their biochemical properties. None was pathogenic for g.pigs, rats or mice.—M.G.G.

Saeter, E. A. & Eieland, E. (1961). Undersøkelser over mastitis hos sau i fjellbygder i Norge. **[Mastitis in sheep in the Norwegian mountains.]**—Nord. VetMed. **13,** 32-44. [In Norwegian. Summaries in English and German. English summary modified.] **2115**

In three mountain districts about 2% of 6,000 sheep were affected by mastitis each year. Sheep are put out to pasture 2–4 weeks after lambing.

*Staphylococcus aureus* was isolated from 248 cases; *E. coli* from 17; *Str. agalactiae* from 3; and *Past haemolytica* from 1 case. *Staph. aureus* strains had uniform haemolytic properties, and all were coagulase-positive.

180 sheep were observed from the time mastitis was detected, until their return from mountain pastures in the autumn. Four of 10 untreated sheep died. The most effective and cheapest treatment was a combination of sulphanilamide powder given orally and sodium sulphadimidine intravenously when the ewe was severely ill, and an aqueous solution

of streptomycin and penicillin injected into the udder. In spite of this treatment 10% of affected sheep died and udders were destroyed in about 40%.

*Staph. aureus* was extremely difficult to eliminate from an infected udder. Since this was the predominant cause of mastitis, the authors recommended slaughter each autumn of sheep known to have had mastitis.

Frank, N. A. & Pounden, W. D. (1961). **The effect of diethylstilbestrol and progesterone on the growth of four mastitis-producing bacteria.**—Amer. J. vet. Res. **22,** 32-36. [Authors' summary modified.] **2116**

*Streptococcus agalactiae,* a haemolytic *Staphylococcus aureus, Escherichia coli* and a *Pseudomonas pyocyanea,* from udders with mastitis, were grown in the presence of diethylstilboestrol and progesterone in concentrations ranging between 0·1 and 5·0 μg./ml.

Both hormones and combinations of them produced inhibition of growth as measured by percentage of light transmitted through the cultures, except in some of the lower concentrations. Slight stimulation of the streptococcus was observed in the lowest concentrations of both hormones, of the staphylococcus in the lower concentration of oestrogen, and of the pseudomonas in concentrations of both hormones below 1 μg./ml.

Naumov, N. & Atanasov, L. (1961). Rezultati lečenja endometrita krava hibitanom, antibiotskim preparatima i lugolom u kombinaciji sa stilbestrolom. **[Treatment of endometritis in cows with chlorhexidine, antibiotics or Lugol's solution, in combination with stilboestrol.]** — Vet. Glasn. **15,** 7-10. [In Croat. Summary in French.] **2117**

Of 147 cows, 83 were treated for endometritis with a combination of 400,000 i.u. of penicillin, 1 g. of a 20% soln. of streptomycin and a suspension of 4 ml. of stilboestrol in 60 ml. of liquid paraffin, applied by intrauterine infusion. Of these 67 became pregnant after service. The conception rate in cows, treated similarly with Lugol's soln. combined with stilboestrol was 15 of 23, and in those treated with chlorhexidine 15 of 41.—E.G.

Schaedler, R. W. & Dubos, R. J. (1961). **The susceptibility of mice to bacterial endotoxins.** —J. exp. Med. **113,** 559-570. [Authors' summary modified.] **2118**

Albino mice free of ordinary bacterial pathogens, as well as of intestinal *Escherichia coli* and of *Proteus* bacilli, were highly resistant to the lethal effect of bacterial endotoxins.

The authors suggested that the pathological effects of endotoxins involve at least two unrelated mechanisms; (a) a primary toxicity, illustrated in this study by the loss of weight and enhancement of infection resulting from the injection of small doses of toxin; (b) an immunological reaction with lethal consequences which became manifest only in animals sensitized to the endotoxin by prior exposure to Gram-negative bacilli.

Zimmermann, G. (1961). Passive Mäuseschutzversuche mit Schweine-Gammaglobulinen. **[Passive immunization in mice with gamma globulins of porcine origin.]**—Mh. VetMed. **16,** 134-137. **2119**

Gamma globulin from pig serum protected mice against infection with streptococci, staphylococci and *E. coli*; its protective value for mice against swine erysipelas bacilli was equal to that of gamma globulin from serum of pigs hyperimmunized against swine erysipelas.—E.G.

Köser, A. & v. Sprockhoff, H. (1960). Der Einfluss der Antibiotika auf den Nachweis von Seuchenerregern durch die bakteriologische Untersuchung. **[Influence of antibiotics on the bacteriological demonstration of disease agents.]**—Mh. Tierheilk. **12,** 322-335. **2120**

The authors concluded from the results of bacteriological examination of 40 pigs, 21 calves and 60 ducks infected experimentally with *Erysipelothrix rhusiopathiae, Salmonella dublin* and *S. typhi-murium* respectively, that the growth of these organisms is normal in cultures from animals fed small, prophylactic quantities of oxytetracycline, but delayed or inhibited when therapeutic doses of antibiotics are given.—M.G.G.

Cimino, G. (1960). Sull'azione antibatterica di una associazione di antibiotici. **[Antibacterial action of a combination of antibiotics.]**—Boll. Soc. ital. Biol. sper. **36,** 1304-1307. **2121**

A combination of chloramphenicol, gramicidin, neomycin and polymyxin was tested against *Staphylococcus aureus, albus* and *citreus, Streptococcus pyogenes* and *viridans, Pseudomonas pyocyanea, Salmonella typhi,* and *Escherichia coli.* There was threefold potentiation against *Staph. albus* and *Ps.*

*pyocyanea* and only a slight increase in activity against *Str. pyogenes* and *Staph. aureus.* —T.E.G.R.

Barbesier, J. (1960). I. Sur une souche de Nocardia isolée du lait d'une vache atteinte de mammite. II. Les champignons levuriformes du genre Candida dans les mammites de la vache laitière. **[I. Nocardia farcinica in milk from a cow with mastitis. II. Fungi of the genus Candida in bovine mastitis.]**—Arch. Inst. Pasteur Algér. **38,** 222-230 & 231-236. 2122

I. A strain of *Nocardia* isolated from a cow with chronic recurrent mastitis did not reduce nitrates, was highly pigmented, rendered milk alkaline, and was pathogenic for g.pigs and rabbits. The name *Nocardia farcinica* var. *asteroides* was proposed.

II. Of 7 *Candida* strains isolated in pure culture from the milk of cows with mastitis (acute in 5 cases), 5 were identified as *C. tropicalis* and 2 as *C. tenuis* and *C. guilliermondii.*—M.G.G.

de Oliveira, H. & Alves da Cruz, A. (1960). Tricofitose em ovinos por "Trichophyton verrucosum". Contribuição para o estudo dos dermatófitos Portugueses. **[Ringworm in sheep caused by Trichophyton verrucosum.]** — Rev. Cienc. vet., Lisboa **55,** 219-223. [Summaries in English and French.] 2123

In a flock of 220 sheep 10 showed ringworm lesions, on the forelegs, caused by *Trichophyton verrucosum,* var. *discoides.* This is the first record of this type of ringworm in Portugal and its importance is discussed.—T.E.G.R.

Nikitin, I. N. (1961). **[Use of the herbicide 2,4-D for treatment of ringworm in calves.]** —Veterinariya, Moscow No. 3 p. 47. [In Russian.] 2124

Good results were claimed (207 of 337 calves cured) for single treatment with 25% oily emulsion of 2, 4-D. Another author (N. D. Simbirtsev, on the same page of *Veterinariya*) treated 5,700 affected calves with either 2, 4-D, "2M" or "2X" and also claimed good results.—R.M.

Imai, N., Kamimura, T., Tabuchi, K., Kobayashi, Y. & Suzuki, T. (1960). **[Papular dermatitis in pigs. I. Aetiological studies with reference to fungi, particularly Aspergillus.]** —Bull. Azabu vet. Coll., Japan No. 7 pp. 135-151. [In Japanese. Summary in German.] 2125

Eight pigs with papular dermatitis yielded 11 genera of fungi and 7 of bacteria. Pathogenicity for lab. animals was marked in *Aspergillus,* which was recovered from 5 of the pigs. It grew in the scarified skin of g.pigs and rabbits and was re-isolated in pure culture. No macroscopic lesions were seen in the lungs of the 8 pigs.—M.G.G.

Grässer, R. (1961). Pathogenitätsteste mit anaeroben Actinomyceten. **[Pathogenicity tests on hamsters with anaerobic actinomycetes.]**—Zbl. Bakt. I. (Orig.) **181,** 103-110. [Summaries in English, French, Spanish and Russian. English summary modified.] 2126

Twenty-eight actinomycetes of different origins were tested for pathogenicity in Syrian hamsters. All of eight strains of *A. israeli* (Kruse) of human origin were highly pathogenic. Strains isolated 12–18 months previously were as pathogenic as recently isolated strains. The hamsters died after about three months.

No other strains caused infection. Even ecological variants of *A. israeli* and the strains pathogenic for pigs and cattle did not cause any reaction in hamsters.

Mémery, G. & Thiéry, G. (1960). La streptothricose cutanée. I. Etude de la maladie naturelle et expérimentale des bovins. **[Cutaneous streptothricosis. I. Study of the natural and experimental disease in cattle.]** —Rev. Élev. **13,** 123-142. 2127

Mémery, G. (1960). La streptothricose cutanée. II. Sur quelques cas spontanés chez des caprins dans la région de Dakar. **[Cutaneous streptothricosis. II. Spontaneous infection in goats in the Dakar district.]**—Ibid. 143-153. [Summaries in English and Spanish.] 2128

I & II. The disease in susceptible species, particularly cattle, is reviewed. Geographical distribution and climatic factors are discussed and lesions, spontaneous and experimental, are described. Observations and comments on experimental reproduction of the disease in cattle and laboratory animals are presented. An account is given of a disease of goats in Dakar which was similar in some respects to bovine streptothricosis and in others to strawberry foot rot in sheep. Lesions, which are described, first appear on hairless parts, lips and muzzle, and are transmitted mechanically, or by licking and biting, to other parts of the body—feet and scrotum. Treatment with chlortetracycline, and $H_2O_2$ and novarsenobenzol (for secondary infection), was success-

ful in 2 of 3 animals. There is a number of photographs, some in colour.—T.E.G.R.

Kintner, L. D. & Blenden, D. C. (1961). **Mycotic dermatitis in a steer.**—J. Amer. vet. med. Ass. **138,** 9-12. **2129**

A fungus resembling *Scopulariopsis brevicaulis* morphologically was isolated from wart-like masses 5 cm. in diameter and nodules 2 cm. in diam. and 3 cm. high that developed on the loin and rump of a steer. There were no other symptoms of ill health, and no lesions were seen on in-contact animals. Reports were received from practitioners of a similar condition in beef cattle kept in close confinement during the winter months.—M.G.G.

Knight, G. J. & Cowan, K. M. (1961). **Studies on allegedly non-complement-fixing immune systems. I. A heat labile serum factor requirement for a bovine antibody complement-fixing system.**—J. Immunol. **86,** 354-360. [Abst. from authors' introduction.] **2130**

The authors found in working with a soluble antigen preparation extracted from *Mycoplasma mycoides,* the causal agent of contagious bovine pleuropneumonia, that heat inactivation of immune bovine serum abolished the ability of the serum to fix complement ($C^1$). Tested unheated, the serum fixed $C^1$ specifically to high titre. In addition, the c.f. activity of heated serum could be fully restored by adding a small amount of normal bovine serum. A similar finding was reported by Nakamura in 1936 [*V.B.* **8,** p. 589] with bovine anti-rinderpest serum.

This report presents a preliminary description of the phenomenon. In view of the limited circulation of the findings of Nakamura this is justified because of the possible implication it may have on investigations concerning the mechanism of $C^1$ fixation and hypersensitivity reactions.

Fuller, R., Newland, L. G. M., Briggs, C. A. E., Braude, R. & Mitchell, K. G. (1960). **The normal intestinal flora of the pig. IV. The effect of dietary supplements of penicillin, chlortetracycline or copper sulphate on the faecal flora.**—J. appl. Bact. **23,** 195-205. [Authors' summary modified.] **2131**

Streptococci, lactobacilli and coli-aerogenes organisms were isolated from pigs receiving penicillin, chlortetracycline or copper sulphate as dietary supplements. Changes in their numbers, physiological type and sensitivity to the supplements fed are described. Penicillin and chlortetracycline rapidly induced a resistant population, but no changes were detected in numbers or types of organisms isolated. Copper sulphate reduced the numbers of streptococci and changed the predominant type from non-lactose-fermenting to lactose-fermenting; there was also a change from a flora in which *L. acidophilus* predominated to one in which *L. brevis* and *L. cellobiosus* tended to become dominant.

Gale, C. & Brown, K. I. (1961). **The identification of bacteria contaminating collected semen and the use of antibiotics in their control.**—Poult. Sci. **40,** 50-55. **2132**

Examination of 440 samples of semen from 40 turkeys revealed *Staphylococcus albus* in 78% of samples, coliform bacteria in 53·5%, streptococci in 5·5%, *Staph. aureus* in 3·5%, diphtheroid bacilli in 3%, *Proteus* in 3%, *Alcaligenes* in 1·5% and *Bacillus* sp. in 1·5%. No bacteria were found in semen collected aseptically from the vasa deferentia. A combination of dihydrostreptomycin (1 mg./ml.) and penicillin (100 i.u./ml.) reduced the bacterial count to nil in 7 of 10 semen samples, and a combination of dihydrostreptomycin (1 mg./ml.) and oxytetracycline (0·1 mg./ml.) reduced it to nil in 4 of 10 samples.—M.G.G.

*See also abstr.* **2366** (penicillin in milk of cows treated for mastitis); **2393** (report, Committee for Colonial Research); **2394** (report, New Zealand); **2395** (report, Uganda); **2396** (report, Nyasaland); **2397** (report, Bulgaria); **2398** (report, Poland); **2399** (report, Netherlands); **2402** (book, avian parasites); **2403** (book, advances in veterinary science, vol. 6).

## DISEASES CAUSED BY PROTOZOAN PARASITES

Oshima, Y. & Akasawa, S. (1960). **[A study on dourine among Manchurian indigenous horses with special reference to isolation and transplantation of the aetiological agent.]**—Bull. Azabu vet. Coll., Japan No. 7 pp. 57-70. [In Japanese. Summary in English.] **2133**

*Trypanosoma equiperdum* isolated from horses in Korea was passaged intratesticularly in rabbits. At the first passage the trypanosomes were localized mostly in the reproductive organs of the rabbits, but at the fourth passage were distributed all over the body. The course of the disease in rabbits resembled spontaneous dourine in horses.—M.G.G.

Nash, T. A. M. (1960). **A review of the African trypanosomiasis problem.**—Trop. Dis. Bull. **57,** 973-1003. **2134**

A review of human and animal trypanosomiasis covering diagnosis, curative and prophylactic treatment, epidemiology, immunology and control measures including vector control by clearing vegetation, with insecticides, and by destruction of game.—E.V.L.

Desowitz, R. S. (1961). **Antigenic relationships between polymorphic and monomorphic strains of the Brucei group trypanosomes.**—J. Immunol. **86,** 69-72. [Author's summary modified.] **2135**

Serum of infected sheep was used as a source of antibody and a test for respiration of trypanosomes was employed to measure the cross-reactions to specific antibody. Antibody to polymorphic strains is relatively specific although a weak cross-reaction with other polymorphic and monomorphic strains may be demonstrated. After prolonged maintenance by mechanical passage in laboratory animals and the resultant loss of the polymorphic character, the antigenic distinctions between the three species tend to disappear. There is almost complete cross-reactivity between monomorphic strains of the three species comprising the *brucei* group.

Garnham, P. C. C. (1960). **Blood parasites of hippopotamus in Uganda.**—E. Afr. med. J. **37,** 495. **2136**

Trypanosomes (possibly *T. simiae*) were found in the blood of 2 of 137 hippopotamuses. One of these also yielded a *Treponema,* possibly of the relapsing fever group.—M.G.G.

I. Kovalev, A. A., Nechval, I. T., Bratkovskii, E. I., Shnitser, V. I. & Shchavinskii, O. I. (1961). **[Aminoacriquine therapy of trichomoniasis in bulls.]** — Veterinariya, Moscow No. 2 pp. 32-35. [In Russian.] **2137**

II. Nazarenko, I. K. (1961). **[Aminoacriquine therapy of trichomoniasis in bulls and cows.]** —Ibid. p. 36. [In Russian.] **2138**

I. The authors described previously a six-day course of combined local and parenteral aminoacriquine therapy [*V.B.* **29,** 3120]. Further experience showed that a ten-day course of treatment gave better results: it cured 34 of 38 bulls.

II. Seven cows were treated by i/v inj. of aminoacriquine at 3 mg./kg. body wt. as well as intra-uterine infusion of 60–75 ml. of 3% soln. Treatment was repeated 4 or 5 days later: it cleared up the vaginal discharge. —R.M.

Fitzgerald, P. R. & Levine, N. D. (1961). **Effect of storage temperature, equilibration time, and buffers on survival of Tritrichomonas foetus in the presence of glycerol at freezing temperatures.** — J. Prot. **8,** 21-27. **2139**

This paper provides details of work reported earlier in abstract form [*V.B.* **27,** 3560].—R.M.

Slavin, D. & Wilson, J. E. (1960). **A fuller conception of the life cycle of Hexamita meleagridis.**—Poult. Sci. **39,** 1559-1576. **2140**

This is a detailed account, accompanied by numerous photomicrographs, of the life cycle and morphology of the flagellate *H. meleagridis.* Series of poults ten days old were infected by instillation into the crop of scrapings from the small intestine of naturally infected poults. Schizogony, division, development of motile forms and encystment were discussed. [See also *V.B.* **24,** 1458 & **25,** 3175.]—E.G.

Hagen, K. W., Jr. (1961). **Hepatic coccidiosis in domestic rabbits treated with 2 nitrofuran compounds and sulfaquinoxaline.**—J. Amer. vet. med. Ass. **138,** 99-100. [Author's summary modified.] **2141**

Sulphaquinoxaline in the drinking water prevented the development of visible liver lesions due to *Eimeria stiedae* and interfered with the life cycle, causing the parasite to produce infertile forms.

Two nitrofurans, nitrofurazone and furazolidone, used separately and in combination, did not prevent the development of liver lesions in rabbits experimentally infected with *E. stiedae.*

Nitrofurazone and furazolidone in combination had a detrimental effect on the life cycle of *E. stiedae,* causing the parasite to produce many infertile forms in the bile tracts.

Olsson, N. & Borg, U. (1961). Försök med Nicarbazin till kycklingar mot coccidios. **[Nicarbazin in avian coccidiosis.]**—Nord. VetMed. **13,** 45-65. [In Swedish. Summaries in English and German. English summary modified.] **2142**

Four hundred chicks, reared in cages up to the age of 6 weeks, were moved to uncleaned pens which had been occupied by hens. The litter in the pens remained unchanged.

Half the birds were given no medication while the remaining half were given Nicarbazin for 4 weeks at the rate of 0·0125% in the mash starting at 5 weeks of age. The drug proved to be an effective coccidiostatic agent with no toxic side effects. Treated birds showed on average 26·5% increased weight gain and 14·9% lower feed consumption per kg. weight gain than untreated controls.

Cuckler, A. C., Garzillo, M., Malanga, C. & McManus, E. C. (1960). **Amprolium. I. Efficacy for coccidia in chickens.**—Poult. Sci. **39,** 1241. **2143**

1-(4-amino-2-n-propyl-5-pyrimidinyl-methyl)-2-picolinium chloride hydrochloride was highly effective and potent against *Eimeria tenella* and *E. necatrix* infections in chicks, and was also effective, although somewhat less potent, against *E. acervulina, E. maxima* and *E. brunetti* infections. In chicks with severe multiple infections with 4 species of caecal and intestinal coccidia, amprolium was more potent than any other coccidiostat tested.—M.G.G.

Harms, R. H., Waldroup, P. W. & Cox, D. D. (1960). **Comparison of various sources and levels of vitamin K activity using chicks with cecal coccidiosis.** — Proc. Soc. exp. Biol., N.Y **105,** 230-232. **2144**

By weight, menaphthone sodium bisulphite was 6–7 times more effective than menaphthone in reducing mortality from *Eimeria tenella* infection in chicks, and vitamin $K_1$ was 4 times more effective than menaphthone sodium bisulphite.—M.G.G.

Schmidt, L. H., Greenland, R., Rossan, R. & Genther, C. (1961). **Natural occurrence of malaria in rhesus monkeys.** — Science **133,** 753. [Authors' abst. modified.] **2145**

A relatively high incidence of malarial infections has been noted in recent importations of rhesus monkeys from Pakistan. This contraverts the widely held belief that rhesus monkeys are free from natively acquired malaria.

Kemron, A., Pipano, E., Hadani, A. & Neuman, M. (1960). [**Trials with a diamidine compound (M & B 5062A) in the treatment of Babesiella berbera infection in cattle.**]—Refuah vet. **17,** 186-190. [In Hebrew. In English p. 236.] **2146**

Seven cows and 14 splenectomized calves infected with *B. berbera* by the injection of infective blood were treated i/m with Diampron (3 : 3$^1$-diamidinocarbanilide di-isethionate). Animals given 10 mg. as 50% soln. per kg. body weight at the onset of symptoms followed, in the calves, by a similar dose 48 hours later, responded with a fall in temp. and in the number of parasites in the blood. But treatment on the 3rd–5th day with 5–15 mg./kg. was less effective. There were no side effects except for ataxia lasting several days in one of 2 calves treated i/v. Treatment of 2 calves with quinuronium sulphate on the 3rd or 4th day of illness had no effect.—M.G.G.

Barnett, S. F. & Brocklesby, D. W. (1961). **A mild form of East Coast fever.**—Vet. Rec. **73,** 43-44. **2147**

A strain of *Theileria parva* derived from *Rhipicephalus appendiculatus* has undergone 7 cattle/tick passages, during which only 13 of the 57 cattle died. The mortality rate was related to the number of infecting ticks: nil when 3 or 5 ticks were used, 21% when 10 or 20 ticks were used, and 60% when 30–100 ticks were used. Challenge of 34 of the cattle that recovered revealed that all were solidly immune to highly virulent strains of *Th. parva*.—M.G.G.

Pande, P. G., Shukla, R. R. & Sekariah, P. C. (1961). **Toxoplasma from the eggs of the domestic fowl (Gallus gallus).**—Science **133,** 648. [Authors' abst. modified.] **2148**

Toxoplasms of varying grades of virulence were isolated from eggs laid by clinically healthy hens and from their internal organs. They were identified as *Toxoplasma gondii* by morphological, serological, cultural, and pathogenic criteria. These findings suggest that toxoplasmosis might be contracted through eating raw or undercooked infected eggs.

Piekarski, G., Saathoff, M. & Schäfer, E. (1961). Die Komplementbindungsreaktion im Plattentest in ihrer Anwendung zum Nachweis von Toxoplasma-Antikörpern. [**Plate complement-fixation test for toxoplasma antibodies.**]—Zbl. Bakt. I. (Orig.) **181,** 407-415. [Summaries in English, French, Spanish and Russian. English summary modified.] **2149**

Kolmer's test-tube technique, using serial serum dilutions, was compared with the plate method of Fulton and Dumbell [*V.B.* **20,** 363], using serial dilutions of complement.

Within certain limits, the titres obtained with the tube test are paralleled by the complement fixation demonstrated by the plate method.

Peterson, W. J. (1960). **Population changes in the cecal protozoa of rats and some factors influencing them.** — Exp. Parasit. **10,** 293-312. [Part of author's abst.] **2150**

Twenty white male rats of the same age and breed, kept on a standard balanced diet, were studied for variability in the protozoan population between rats in the group, between various regions of the caecum in the entire group, and between various regions of the caecum in individual hosts.

Within the group of rats, significant variations in population size was found for *Trichomonas hominis, Tr. minuta* and *Chilomastix bettencourti. Tr. muris* did not differ significantly.

*See also abst.* **2395** (report, Uganda); **2396** (report, Nyasaland); **2397** (report, Bulgaria); **2398** (report, Poland); **2399** (report, Netherlands); **2402** (book, avian parasites); **2403** (book, research in veterinary science, vol. 6).

## DISEASES CAUSED BY VIRUSES AND RICKETTSIA

I. Willems, R. (1960). La fièvre aphteuse en Europe. Epizootologie—prophylaxie. **[Epidemiology and prophylaxis of foot and mouth disease in Europe.]**—Bull. Off. int. Epiz. **54,** May pp. 5-19. **2151**

II. Boïko, A. A. (1960). Quelques problèmes de l'épizootologie de la fièvre aphteuse en U.R.S.S. et les méthodes de son éradication. **[Epidemiology and control of foot and mouth disease in the U.S.S.R.]**—Ibid. pp. 20-34. [Summaries in English and Spanish.] **2152**

III. Rafyi, A. (1960). Epizootologie et prophylaxie de la fièvre aphteuse au Moyen-Orient. **[Epidemiology and prophylaxis of foot and mouth disease in the Middle East.]** —Ibid. pp. 35-49. [Summaries in English and Spanish.] **2153**

IV. Henderson, W. M. (1960). Epizootologie et prophylaxie de la fièvre aphteuse dans les Amériques. **[Epidemiology and prevention of foot and mouth disease in the Americas.]** —Ibid. pp. 61-73. [Summaries in English and Spanish.] **2154**

I. In 1959 most countries in Europe, with the exception of France, Spain, Italy and Portugal, had few outbreaks. Ireland, Norway and Sweden (owing to their geographical position) and Luxembourg were free; Denmark and Albania had one outbreak each. Great Britain, in spite of its geographical position and strict regulations, had 9 primary outbreaks of which 6 were ascribed to imported meat and one to airborne infection; the source of the other 2 was obscure. In some countries there was recrudescence from outbreaks during the previous year. Factors responsible for the spread of infection are discussed. Control is dealt with under 2 aspects; in Europe as a whole and in individual countries. Protective measures should be directed against the usual O, A and C as well as the exotic types of virus. Attention is drawn to the dangers from escape of virus (particularly the exotic type) from virus Institutes. The responsibilities of individual countries are enumerated, with particular reference to early notification, typing and exchange of information between veterinary services. For control, slaughter (associated or not with ring, regional or general vaccination) is notably efficacious. As regards vaccines, preference is given to trivalent ones which, in 3 million vaccinations, gave satisfactory results.

II. Incidence of F. & M. disease in the U.S.S.R. during 1940–59 is reviewed. It was high in 1940–46 and again in 1951–53. The role of climate, virus survival, animal husbandry, transhumance, virus carriers and reservoirs is discussed. Control is based on quarantine, restriction of movement of animals and vaccination. Methods of immunization and vaccine production are reviewed. The commonest types of virus are $O_2$ and $A_5$, though C has been reported in some regions and O in wild animals. During 1954–58 the V.I.E.V. vaccine was used on about 80 million animals: 1 ml. submucosally in the upper lip (gives quicker immunization) or 2 ml. s/c. In 1958 the disease was eradicated from Kirghizia by the use of a lapinized vaccine. Slaughter of affected or suspect animals is not a routine control measure but is recommended in combination with vaccination: it is considered of value when the number of animals to be slaughtered is small. [See also *V.B.* **31,** 394.]

III. F. & M. disease has been endemic for many years in the Near East, assuming epidemic proportions from time to time. Owing to the presence of other diseases (rinderpest, etc.) and shortage of veterinarians it was not, until recently, given adequate attention.

Incidence in various Near East countries, factors favouring spread, and types of virus responsible are discussed. Types O, A and C and Asia 1 have been identified. Local cattle are mildly and European cattle are seriously affected. Sheep, goats, pigs, camels and wild animals are usually involved. Vaccination is resorted to in some countries.

IV. North and Central America and the Caribbean are free from the disease. In Columbia and Venezuela the causal types are O and A while in Argentina, Bolivia, Chile, Paraguay, Peru and Uruguay, Types O, A and C are responsible. The role of geographical position, climate and susceptible wild animals in the spread of the disease are discussed, movement of animals being considered the most important factor. Vaccines treated with aluminium hydroxide, formol or saponin are employed for control. Stress is laid on the urgency of control and eradication before further improvements in means of communication render it more difficult.

—T.E.G.R.

Norcross, N. L. & Poppensiek, G. C. (1961). **Conglutinating complement adsorption test as applied to foot and mouth disease.**—J. Bact. **81,** 478-481. [Authors' summary modified.] **2155**

Antigens were prepared from infected g.pig metatarsal and bovine tongue epithelium, and virus grown in tissue culture.

Haemolytic complement fixation and conglutination tests gave results of equal sensitivity when antibodies in rabbit or g.pig sera were titrated. The conglutinating complement adsorption test was slightly more sensitive with bovine antisera, and much more useful for detecting antibody in swine serum by avoiding the procomplementary activity which renders the haemolytic test unreliable.

De Boer, C. J. & Bachrach, H. L. (1961). **The multiplication of foot-and-mouth disease virus in trypsinized calf kidney and tongue cells and its use as immunizing and complement-fixing antigens.** — J. Immunol. **86,** 282-291. [Authors' summary modified.] **2156**

Although minced calf kidney tissue in suspended cultures has not proved satisfactory for propagation of the virus, trypsin-dispersed calf kidney cell suspension supported multiplication of the virus.

The use of confluent monolayers of calf kidney cells in Povitsky flasks offers a very effective means to produce large quantities of virus.

Formalin-treated tissue culture virus in mice and g.pigs is capable of inducing antibody titres to significant levels.

Acid inactivation of the virus destroyed its immunogenic properties.

Schwöbel, W. & Siedentopf, V. (1961). Charakterisierung eines drei Jahre alten Zellstammes aus der Schweineniere und Untersuchungen über sein Verhalten gegenüber dem Virus der Maul- und Klauenseuche. **[Properties of pig kidney cells cultured for three years and their response to foot and mouth disease virus.]**—Zbl. Bakt. I. (Orig.) **181,** 3-16. [Summaries in English, French, Spanish and Russian. English summary modified.] **2157**

No obvious morphological changes could be observed three years after initial adaptation to culture. Compared with cells of primary cultures, the cells were small and were nearly all of the same type. Glucose metabolism was much lower than that of freshly established cultures. In order to produce cytopathic effects in the cultures, higher concentrations of F. & M. virus, (especially of type C) were necessary than in primary cell cultures. Cultures infected with the virus produced at least the same amount of infectious virus and complement-fixing antigen as primary cell cultures.

Breese, S. S., Jr. & Trautman, R. (1960). **Free diffusion measured by biological assay in multilayered cells: II. Diffusion coefficient of foot-and-mouth disease virus determined by infectivity.** — Analyt. Biochem. **1,** 307-316. [Part of authors' summary.] **2158**

A multilayered glass diffusion cell was used to measure the diffusion coefficient of Type A virus propagated in bovine kidney tissue culture. Diffusion was followed by changes in infectivity rather than by optical methods: infectivity of each fraction was measured by plaque assay to determine the concentration of virus in each layer after diffusion.

Results indicated a particle diameter for F. & M. disease virus of $22{\cdot}7 \pm 1{\cdot}5$ m$\mu$ which compares favourably with the electron microscope value of $23 \pm 2$ m$\mu$.

Becker, C.-H. (1961). Die Aujeszkysche Krankheit in deutschen Schweinebeständen. **[Aujeszky's disease in pigs in Germany.]** — Mh. VetMed. **16,** 88-96. **2159**

Outbreaks of Aujeszky's disease in five large piggeries killed between 40–90% of piglets up to two months of age and also a

number of dogs and cats which had been fed meat from dead piglets. Some apparently healthy sows aborted. Pulmonary oedema, petechial haemorrhages in the kidneys, miliary necrosis in liver, spleen and adrenals were frequent P.M. features. The virus was recovered from rabbits after s/c injection with a 10% suspension of brain, lung or spleen material from dead piglets, or by i/m inj. of filtrates of such suspensions. The virus was also isolated from sheep of a flock of about a thousand, 35 of which had died during an outbreak, at first ascribed to listeriosis.—E.G.

Ben-Porat, T., Reissig, M. & Kaplan, A. S. (1961). **Effect of mitomycin C on the synthesis of infective virus and deoxyribonucleic acid in pseudorabies virus-infected rabbit kidney cells.** — Nature, Lond. **190,** 33-34. [Authors' summary modified.] **2160**

The inhibition of DNA synthesis in cells treated with mitomycin C is overcome under certain conditions by infection with Aujeszky's disease virus, probably as a result of an induction by the virus in the infected cells of enzymes connected with the DNA synthesizing mechanism; the DNA formed under these conditions does not seem to be functional and the virus particles formed are non-infective.

Thiéry, G. (1960). Que peut-on attendre de la méthode de précipitation en milieu gélifié pour le diagnostic de la rage dans la région de Dakar. **[Variability of the results of the gel-diffusion test for rabies in the region of Dakar.]** — Rev. Elev. **13,** 251-257. [Summaries in English and Spanish.] **2161**

The gel-diffusion test for rabies was negative for nearly all of over 30 animals of 13 species, infected experimentally or naturally with fixed or street rabies virus in the Dakar region. Specific precipitation was obtained only at certain seasons of the year. In September and October infected mice formed virulent antigen but not precipitating antigen. At the end of the rainy season [end of October], virus titres in infected animals did not exceed $10^{-3.5}$, which is insufficient for a good precipitation reaction. Attempts to demonstrate rabies by serum electrophoresis were equally disappointing. An increase in the proportion of $\gamma_2$-globulins in rabid animals was observed only in May and June.—M.G.G.

Massignani, A. M. & Malferrari, R. (1961). **Phosphotungstic acid-eosin combined with hematoxylin as a stain for Negri bodies in paraffin sections.** — Stain Tech. **36,** 5-8. [Authors' introduction modified.] **2162**

Continuing a study of the Papanicolaou's stain, as adapted to Negri bodies by Massignani & Refinetti (1958), it was verified that the component which was responsible for the results was an eosin solution combined with phosphotungstic acid.

Schnelle, W. (1961). Das verschiedenartige klinische Bild der Tollwut beim Rind. **[Variability in the clinical picture of rabies in cattle.]** — Dtsch. tierärztl. Wschr. **68,** 136-141. [Summary in English.] **2163**

Clinical details were given of 13 cases of rabies in cattle, observed between October 1959 and August 1960. It was probably transmitted by foxes but no bite wounds were found. Symptoms varied from digestive disorders to severe nervous disturbances. P.M. features included gastric and intestinal haemorrhages and enlarged, friable liver. Five veterinary surgeons were given antirabic treatment.—E.G.

Poul, J. (1960). Etudes sur la vaccination antirabique des chiens en Algérie. **[Immunization of dogs against rabies in Algeria.]**— Arch. Inst. Pasteur Algér. **38,** 196-215. **2164**

Plantureux, Flury, phenol, and glycerol vaccines against rabies were all inadequate when tested in laboratory dogs, as they did not protect adequately or a large number of doses had to be given. Good results were obtained with a single s/c dose of a vaccine prepared from a virus inactivated by heat in the presence of antibiotics, after it had undergone 43 intracerebral passages in dogs.
—M.G.G.

Ota, Y. (1960). **[Viricidal action of the culture filtrate of Bacillus subtilis against rabies fixed virus.]**—Bull. Azabu vet. Coll., Japan No. 7 pp. 45-56. [In Japanese. Summary in English.] **2165**

Protection against rabies virus was observed in mice inoculated with a mixture of the virus and culture filtrate of *B. subtilis,* or with *B. subtilis* culture filtrate 24 hours after intraplantar or intra-abdominal injection of rabies virus. At 28°C. the filtrate or supernatant fluid of *B. subtilis* culture inactivated 20% or 40% infected brain emulsion in 29–37 days. Rabies vaccine inactivated by culture filtrate or supernatant fluid was no less potent than vaccine inactivated by 0·5% phenol.
—M.G.G.

I. Steele, J. H. (1961). **Animal influenza.**—Amer. Rev. respir. Dis. **83,** No. 2. Part 2. 41-46. **2166**

II. Schaeffer, M. & Robinson, R. Q. (1961). **Influenza in swine and horses.**—Ibid. 47. **2167**

III. Doll, E. R. (1961). **Influenza of horses.**—Ibid. 48-50. Discussion: pp. 50-53. **2168**

I. A review of the history, aetiology and epidemiology of influenza in horses, pigs, cattle, fowls and ducks.

II. Haemagglutination-inhibition tests were made on serum collected from horses and pigs both before and after an epidemic of human influenza. Of 228 horse sera, none had antibody against swine/1976/31 antigen, and 51 had titres against A/Asian/Japan/305/57 antigen, but as these were very low and sporadic, they were considered to be non-specific. Of 616 pig sera, 137 had significant titres for swine/1976/31 antigen, but none for the antigen of the human influenza virus.

III. Three distinct respiratory diseases of horses were described: viral rhino-pneumonitis, viral arteritis, and equine influenza due to A-equi virus. In Kentucky, 47% of 198 yearlings had serum h.i. titres of 1 : 5 to 1 : 20 for A-equi-Prague-56 virus, and 72% of 792 mares had titres of 1 : 5 to 1 : 160. As these titres were considerably lower than those reported for convalescent horses in Czechoslovakia [see *V.B.* **29,** 1060], it was suggested that they may have been due to a related, but not identical virus. Influenza did not develop in over 20 horses infected with A-equi virus that had undergone 5–8 passages in chick embryos.

In the Discussion, it was suggested that an animal reservoir of the pandemic influenza viruses may exist in China.—M.G.G.

McKinney, R. W. & Davenport, F. M. (1961). **Studies on the mechanism of action of emulsified vaccines.** — J. Immunol. **86,** 91-100. **2169**

Influenza vaccine was prepared by emulsifying formolized allantoic fluid with the adjuvant Arlacel A, followed by the addition of a mineral oil "Drakeol 6VR". Experiments on mice indicated that a large and effective portion of antigen was released from the vaccine soon after s/c inj.—R.M.

Depoux, R. & Chambron, J. (1960). Enquête sérologique sur l'incidence de la poliomyélite chez les singes sauvages de la République du Congo. **[Serological survey of poliomyelitis in wild monkeys in the Congo.]**—Bull. Soc. Pat. exot. **53,** 781-784. **2170**

Of 130 monkeys of 12 species captured in the Congo, 42 (32%) had antibodies against all 3 types of poliomyelitis virus, and 5 against type III alone.—M.G.G.

McIntosh, B. M. (1961). **Susceptibility of some African wild rodents to infection with various arthropod-borne viruses.**—Trans. R. Soc. trop. Med. Hyg. **55,** 63-68. [Author's summary.] **2171**

The susceptibility, measured in terms of viraemia and antibody response, of nine species of African wild rodents to one or more of 11 different arthropod-borne viruses was investigated. None of the rodents was susceptible to Spondweni, Pongola and Wesselsbron viruses. Following inoculation with West Nile and Bunyamwera viruses a single rodent species showed low grade viraemia. One or more rodent species responded with viraemia to Simbu, Rift Valley fever, Uganda S, Germiston, chikungunya and Middelburg viruses. Forty-six of 72 convalescent sera from rodents which developed viraemia had antibody. The possibility of these rodents being implicated in transmission cycles of these viruses is discussed.

Wagner, R. R. (1961). **Biological studies of interferon. I. Suppression of cellular infection with Eastern equine encephalomyelitis virus.** — Virology **13,** 323-337. [Author's abst. modified.] **2172**

A simple, sensitive, and reproducible method for titration of interferon is based on inhibition of plaque formation by Eastern equine encephalomyelitis (EEE) virus on monolayers of chick embryo cells. Interferon produced in the chorioallantoic sac of chick embryos actively infected with an influenza A virus did not inactivate extra-cellular EEE virus, nor did it affect the rate of virus adsorption on chick embryo fibroblasts. Interferon was absorbed by cells and was able to interrupt virus production even late in the course of a well-established infection. Susceptibility to infection could be restored by incubation of resistant cells in medium free from interferon. Interferon also protected intact chick embryos against the lethal effect of EEE virus. The action of interferon was species specific as demonstrated by reciprocal cross tests between duck and chick.

Spalatin, J., Karstad, L., Anderson, J. R., Lauerman, L. & Hanson, R. P. (1961). **Natural and experimental infections in Wis-**

**consin turkeys with the virus of Eastern encephalitis.** — Zoonoses Research **1,** 29-48. [Authors' summary modified.] **2173**

A study of sporadic deaths among growing turkeys on range in Wisconsin, revealed a high frequency of neutralizing antibodies to eastern equine encephalomyelitis virus (EEE). Affected birds displayed tremors, incoordination and paralysis. Nine diseased birds had no gross pathological changes, but histopathological examination revealed encephalitic or degenerative changes in seven. Most birds possessed significant levels of EEE neutralizing antibody, and in 4 of 7 which survived a sufficient length of time, it was possible to demonstrate increasing titres. A high frequency of *Leucocytozoon* infection was found, but it was impossible to relate this to the disease.

Haematophagous Diptera were collected, identified and processed in attempts to isolate viral agents, all without success. Black flies were the most abundant Diptera observed feeding on the turkeys.

Upon examination of two paralysed eight-week-old turkeys from Dane County, one was found to be infected with Newcastle disease virus; the other, with EEE. Although both poults possessed EEE antibody titres, only the bird from which Newcastle virus was isolated possessed a Newcastle virus haemagglutination-inhibition titre.

When EEE virus was inoculated by routes simulating arthropod exposure, turkeys eight weeks of age or older developed antibodies without overt signs of disease. Younger poults developed encephalitis and died. Viraemia in very young poults was of sufficient magnitude for mechanical transmission by an arthropod vector. In general, the histological and serological responses in turkeys to experimental infection resembled the naturally occurring disease. EEE neutralizing antibodies were also found in the blood of a wild turkey. This is believed to be the second report of the occurrence of EEE antibodies in turkeys; the first report of concomitant disease.

Kralj, M., Petrović, D., Miklaušić, B. & Maržan, B. (1961). Pojava zarazne anemije nakon kastracije pastuha. [**Equine infectious anaemia in horses following castration.**] — Vet. Arhiv. **31,** 11-19. [In Croat. Summaries in English and French.] **2174**

Ten of 14 horses developed infectious anaemia after castration. With one exception they came from regions where the disease had not been reported before. Two died, one seven, the other ten days after onset of symptoms. The remainder were slaughtered. P.M. examination of the horse from the endemic region was suggestive of the chronic form, in the others of either the acute or subacute form. Details were given of two further outbreaks involving 22 newly-castrated horses. Prevention by aseptic surgical methods was discussed.—E.G.

Gregorović, V., Šenk, L. & Bekš, L. (1960). Proučavanje dinamike histoloških promjena u jetri in vivo kod konja eksperimentalno zaraženih virusom infekciozne anemije s posebnim obzirom na fluktuaciju periferne siderocitoze. [**Histopathology of the liver during equine infectious anaemia, in relation to siderocytes in peripheral blood.**] — Vet. Arhiv **30,** 324-332. [In Croat. Summaries in English and French.] **2175**

In liver biopsy samples from horses with spontaneous or experimental infectious anaemia, there was moderate haemosiderosis 7–10 days after the onset of fever. Moderate peripheral siderocytosis was seen in one horse five days and in another 20 days after the onset of fever. There was a tendency for haemosiderosis and peripheral siderocytosis to vanish and reappear. The diagnostic value of peripheral siderocytosis in histologically doubtful cases was discussed.—E.G.

Brown, R. D. & Lampkin, G. H. (1961). **Effect of caprinized rinderpest vaccine on the growth of weaner calves.**—E. Afr. agric. J. **26,** 156-157. [Authors' summary modified.] **2176**

Six pairs of zebu weaned calves aged 9–12 months were used to gauge the effect of caprinized rinderpest vaccine on growth. The inoculated animals lost weight, but the check was temporary. Later, they grew at a rate slightly faster than the uninoculated control calves so that, by the 17th week, both groups had acquired similar weight gains.

Liess, B., Reuleaux, I.-R. & Gründer, H.-D. (1960). Feststellung der virusbedingten Rhinotracheitis infectiosa des Rindes. III. Infektionsversuche an Rindern. [**Identification of infectious bovine rhinotracheitis. III. Experimental infection of cattle.**] — Dtsch. tierärztl. Wschr. **67,** 605-614. [Summary in English.] **2177**

Four cattle were inoculated by different routes with a virus isolated from a bull with

symptoms of severe catarrh [see *V.B.* **31,** 1468 & 1469]. Subcutaneous and intranasal infection caused rhinotracheitis and intravaginal infection caused pustular vaginitis.
—M.G.G.

Hermodsson, S., Dinter, Z. & Bakos, K. (1961). **Studies on variants of a bovine strain of parainfluenza 3 virus. 2. Haemagglutinating activity.** — Acta path. microbiol. scand. **51,** 75-80. [In English. Authors' summary modified. For Part 1 see V.B. **30,** 3903.] **2178**

A bovine strain of parainfluenza-3 virus and two variants with different cytopathic effects isolated from this strain had a haemagglutinating activity similar to that of mumps and Newcastle disease viruses, *i.e.*, ability to lyse red blood cells, to form agglutinin on stable cells, and to show a higher HA titre when the titration was performed at 37°C. than at 4°C. One of the variants differed from the other variant and from the original virus population by a slower rate at which the haemagglutinin eluted from g.pig erythrocytes.

Pirtle, E. C. & Layton, J. M. (1961). **Epizootic hemorrhagic diseases in white-tailed deer — characteristics of the South Dakota strain of virus.** — Amer. J. vet. Res. **22,** 104-108. [Authors' summary modified.] **2179**

Several characteristics of the South Dakota strain of virus causing epizootic haemorrhagic disease of deer have been investigated. The virus has a signal pathogenicity for native white-tailed deer, but mule deer are relatively refractory to its effects. Adaptation of the virus to species other than deer was not successful, but a cytopathic effect in cultured foetal deer spleen cells was observed, beginning with the second passage. Based on filtration experiments and electron microscopic studies, the virus was considered to range from 20 to 30 mμ in diameter and to be relatively spherical.

Eisma, W. A. & Terpstra, J. I. (1961). Virus abortus bij schapen. [**Virus abortion in sheep in the Netherlands.**]—Tijdschr. Diergeneesk. **86,** 427-430. [In Dutch. Summaries in English, French and German.] **2180**

The first outbreak recorded in the Netherlands occurred in one flock in North Brabant in January and February 1961. Diagnosis was based on clinical features, the presence of elementary bodies in smears of placenta, placental fluid and vaginal secretion, and the cultivation of elementary bodies in chick embryos.—R.M.

Hatziolos, B. C. (1960). **Scrapie in Maryland: report on 2 cases. Parts I & II.**—Maryland Vet. **2,** No. 3 pp. 10-12 & 14; No. 4 pp. 8-10 & 13-14. **2181**

A detailed account of the first two cases to be reported in Maryland.—R.M.

Darcel, C. le Q. & Avery, R. J. (1961). **Brain glycogen- and copper-levels in normal sheep and sheep affected with scrapie.** — Nature, Lond. **189,** 410. **2182**

The glycogen content of the brain was 0·86–1·04 mg./g. of dry matter in 6 sheep with experimental scrapie and 0·57–1·18 mg./g. in 9 normal sheep. The copper content of the brain was 12·2–16·7 p.p.m. of dry matter in the sheep with scrapie and 13–35 p.p.m. in the normal sheep. It was concluded that scrapie is not related to the human disorders Castaigne-Lhermittes's disease, characterized by the accumulation of glycogen in the nerve cells, and Wilson's disease, associated with an excess of Cu in certain organs.
—M.G.G.

Joubert, L., Mackowiak, C., Leftheriotis, E. & Oudar, J. (1961). Variations épidémiologiques, anatomo-cliniques et virologiques de la peste porcine. [**Swine fever caused by strains of low infectivity and low virulence in France.**]—Rev. Méd. vét. **112,** 5-14. [Summaries in English and Spanish.] **2183**

About 15 outbreaks of swine fever in south-east France in the last 2 years were caused by variant strains of low infectivity and low virulence. Groups of pigs in contact with infected groups were often spared; clinically, only pulmonary symptoms and anorexia were commonly observed; and P.M., haemorrhagic lesions were usually absent. Four passages in piglets of 2 of these variants did not increase their virulence. Immunized adult pigs were resistant to 7 of these variants.
—M.G.G.

Manninger, R. (1960). La prophylaxie de la peste porcine classique. [**Prophylaxis of classical swine fever.**]—Bull. Off. int. Epiz. **53,** 1497-1505. [Summaries in English and Spanish.] **2184**

A review of the methods of controlling swine fever according to the extent or previous absence of the disease in a particular country, and indications and contra-

indications for the use of immune serum, crystal violet vaccine and lapinized virus.
—M.G.G.

DeTray, D. E., Zaphiro, D. & Hay, D. (1961). **The incidence of African swine fever in wart hogs in Kenya — A preliminary report.**—J. Amer. vet. med. Ass. **138,** 78-80. [Authors' summary modified.] **2185**

African swine fever virus was isolated from 5 of 9 wart-hogs shot in one area of Kenya over a period of 10 days. Wart-hogs may serve as inapparent carriers and are a potential threat to the pig industry.

Anon. (1960). **Recent progress on a specific diagnostic test for African swine fever.**—Bull. Off. int. Epiz. **53,** 1555-1557. [In French pp. 1552-1554.] **2186**

This note consists of abstracts of 2 recent papers on the diagnosis of African swine fever in tissue culture. [See also *V.B.* **30,** 2203 & **31,** 769.]—M.G.G.

Serres, H. (1960). Etude sur la pathogénie et l'épidémiologie de la paralysie contagieuse des porcs à Madagascar. **[Pathogenesis and epidemiology of contagious paralysis of pigs in Madagascar.]** — Rev. Elev. **13,** 245-249. [Summaries in English and Spanish.] **2187**

In Madagascar, piglets were unaffected by oral or i/v administration of Teschen disease virus, but in piglets forced to inhale aerosols of the virus the infection rate was 90%. The incubation period was 10–20 days, and 85% of the animals developed the first paralytic symptoms between the 10th and 15th days. In an attempt to demonstrate viraemia, blood was taken from 2 piglets once every 12 hours from the time of intranasal infection until death and injected into susceptible piglets, but these remained healthy. Immune serum did not protect piglets against intranasal infection. The virus was not demonstrated in the faeces of infected animals, but in one of 3 experiments the disease was transmitted by intranasal administration of an aerosol of filtered nasal secretion from a sick pig. It was concluded that Madagascar strains of Teschen disease virus are more neurotropic than those being studied in Europe, and that natural infection is by the aerial route.—M.G.G.

Craighead, J. E., Peralta, P. H. & Murnane, T. G. (1961). **Oral infection of swine with the encephalomyocarditis (EMC) virus.** — Fed. Proc. **20,** No. 1. Pt. 1 p. 446. [Authors' abst. modified.] **2188**

The authors have already described an outbreak of acute fatal myocarditis of swine caused by the EMC virus [*V.B.* **30,** 1832]. Since the epidemiology suggested that infection was by ingestion, experiments were undertaken to reproduce the disease by feeding virus to young pigs. Viraemia and virus excretion from the gastro-intestinal tract occurred following the administration of brain from infected mice. Infected pigs developed high titres of HI and neutralizing antibody during convalescence and had myocardial fibrosis at autopsy. Myocarditis was demonstrated in one pig dying suddenly on the fifth day. The heart of this animal contained at least $10^{5.5}$ $LD_{50}$ virus per g. Virus excretion in faeces may serve as a means of transmission.

Sen, H. G., Kelley, G. W., Underdahl, N. R. & Young, G. A. (1961). **Transmission of swine influenza virus by lungworm migration.**—J. exp. Med. **113,** 517-520. **2189**

Fourteen pathogen-free pigs were given varying doses of lungworm larvae which had been collected from earthworms which had been fed on lungworm eggs from pigs that had been artificially infected with swine influenza virus (Shope's Strain S-15).

The pigs were then given "provocative" stimuli, either dosing with ascaris ova, multiple injections of ascaris extracts or injection of calcium chloride into the chest cavity.

Three of the fourteen pigs developed high temperatures at from the 16th–25th day after infection with the lungworm larvae and swine influenza virus was demonstrated in lung tissue from these three and from four others which had not developed high temperatures. All these seven pigs are stated to have had lung lesions which are not described but are stated to have been "typical influenza lesions".

These results are considered to confirm Shope's belief that lungworm larvae might serve as intermediary hosts and transmit swine influenza virus in a latent form.

Harnach, R. & Mesároš, E. (1960). Výzkum enzootické bronchopneumonie (chřipky) prasat z hlediska imunoprofylaxe. **[Immunology and prophylaxis of enzootic bronchopneumonia (influenza) in pigs.]**—Věd. Práce Ustavu vet. Brno **1,** 61-78. [In Czech. Summaries in German and Russian.] **2190**

From experiments in over 500 piglets aged 2 days to 3 months it was concluded that an adsorbed formolized vaccine prepared from five strains of influenza virus plus bacteria,

isolated from pigs with influenza, was superior to a similar vaccine but without these bacteria. The bacteria were *Haemophilus suis, Escherichia coli, Proteus vulgaris, Staphylococcus aureus, Staph. albus, Staph. citreus, Pseudomonas pyocyanea, Streptococcus pyogenes, Pasteurella multocida* and *Aerobacter aerogenes*.—E.G.

Switzer, W. P., Roberts, E. D. & L'Ecuyer, C. (1961). **Site of localization and effects of swine nasal virus in experimental pigs.** — Amer. J. vet. Res. **22,** 67-71. [Authors' summary modified.] **2191**

Intranasal inoculation of nine viral and 2 pleuropneumonia-like cytopathic isolates from the nasal cavities of pigs, failed to produce respiratory disease in pigs. Some of the agents were present in the nasal cavities of the test pigs 5–7 days after inoculation. The viral agents were more frequently recovered from, and persisted longer in, the intestinal tract of the test pigs. One viral isolate produced a febrile reaction or death, or both, in two groups of inoculated pigs, but not in pigs of three subsequent groups.

Several of the viral isolates produced mild cellular reaction in the nasal cavities and intestinal tract of experimental pigs.

Three viral isolates producing one type of cell culture destruction were antigenically similar, but the isolates producing another type of cell culture destruction appeared to have two or more antigenic types.

Howell, D. G. (1961). **Vaccination of the dog.** —Vet. Rec. **73,** 46-50. Discussion: pp. 50-54. **2192**

Evidence was adduced, suggesting that the failure of a proportion of dogs to respond to avianized distemper vaccine may be due to interference by canine hepatitis virus. For this reason, living vaccine against hepatitis is not recommended at present. Dogs that lead a restricted life should be re-vaccinated against distemper at intervals of 12–18 months.—M.G.G.

Zuschek, F., Jungk, N., King, D. & Swangard, W. M. (1961). **Noninterference with immunity by a trivalent vaccine containing distemper virus, infectious canine hepatitis virus, and Leptospira canicola.** — Cornell Vet. **51,** 68-76. [Authors' summary.] **2193**

By the use of protection tests and a trivalent vaccine (canine distemper-infectious canine hepatitis-*Leptospira canicola*) it was shown that pups with an immunity to any two of the components will develop a satisfactory immunity to the third component when inoculated with the trivalent vaccine.

Voss, U. (1961). Corticoide bei Virusinfektionen des Hundes. **[Corticosteroids in virus infections of dogs.]**—Kleintier-Praxis **6,** 33-36. [Summaries in English and French.] **2194**

In 90 dogs and 20 cats with virus infections, chiefly distemper and hepatitis, and feline infectious enteritis, good results followed treatment with corticosteroids and antibiotics. The corticosteroids were given orally for 5–12 days, beginning not later than the first few days of symptoms.—M.G.G.

Christoph, H.-J. & Vierneisel, H. (1961). Die prognostische Bedeutung des quantitativen und qualitativen weissen Blutbildes bei der "sogenannten Katzenstaupe". **[Prognostic value of the white blood picture in feline enteritis.]**—Kleintier-Praxis **6,** 10-15. **2195**

The authors studied the blood picture in 22 cats with experimental and in 56 cats with spontaneous virus enteritis. Prognosis was good when the leucocyte count was not below 2,000 on the first day and relative lymphocytosis did not exceed 70%. When the leucocyte count was 1,000–2,000 cells/cubic mm. on the first day and relative lymphocytosis over 90%, prognosis was bad.—E.G.

Jenkin, H. M., Ross, M. R. & Moulder, J. W. (1961). **Species-specific antigens from the cell walls of the agents of meningopneumonitis and feline pneumonitis.** — J. Immunol. **86,** 123-127. [Authors' summary modified.] **2196**

When cell walls were prepared from the agents of meningopneumonitis and feline pneumonitis by treatment first with deoxycholate and then with trypsin, the group-specific antigens were found in the deoxycholate extract whereas the species-specific antigens remained in the cell walls. Group-specific antigens were demonstrated by complement fixation, whereas the presence of species-specific antigens was shown by both complement fixation and absorption of infectivity-neutralizing antibody. The possible application of these findings to practical serology of the psittacosis group was discussed.

I. Kifer, P. E., Tufts, J. M. & Redhage, W. A. (1961). **Effect of vaccination for mink virus enteritis on reproduction and kit growth.**— Amer. Fur Breeder **34,** No. 2 pp. 16-17. **2197**

II. Bennett, J. M. & Roy, L. (1961). **The**

**role of parental immunity in mink virus enteritis.**—Ibid. pp. 16-17 & 36. **2198**

I. There were no significant differences in the number and growth of the young of 113 female mink that had been immunized, one month before the breeding season, against mink virus enteritis and the young of 111 non-immunized females.

II. Nine young from immunized dams were immune to oral doses of mink enteritis virus at the age of 4, 5 or 6 weeks, but three challenged at 7 weeks were susceptible. All of 12 control young from non-immunized dams were susceptible. Five young from immunized and 5 from non-immunized dams were themselves immunized at 4 or 5 weeks of age. All were immune to challenge 3 weeks later.

—M.G.G.

Marshall, I. D. & Douglas, G. W. (1961). **Studies in the epidemiology of infectious myxomatosis of rabbits. VIII. Further observations on changes in the innate resistance of Australian wild rabbits exposed to myxomatosis.** — J. Hyg., Camb. **59,** 117-122. [Authors' summary modified.] **2199**

In an area where the selection pressure of annual epizootics of myxomatosis had been extremely high, the innate resistance of the rabbits increased to such an extent that only 26% died when inoculated with a strain of virus which kills 88% of genetically unselected rabbits.

Mortality rate in the field is influenced by innate resistance at least as much as under the sheltered conditions of an animal house. The effect was apparent with both an attenuated and a highly virulent strain of virus.

The moderately high ambient temperatures during the field experiments probably contributed to the sparing effect.

Altucci, P., Lorenzutti, G. & Sapio, U. (1960). Ulteriori acquisizioni sulle caratteristiche biologiche del virus EDP. **[Further data on the biological properties of "EDP" virus of hepatitis in mice.]** — Boll. Soc. ital. Biol. sper. **36,** 1438. **2200**

A study of the biological characteristics of "EDP" virus [see *V.B.* **30,** 3591] led to the conclusion that the virus belongs to the ectromelia group.—T.E.G.R.

Meier, H. (1960). **Spontaneous cytomegalic inclusion body disease involving lacrimal glands of caesarian-derived (so-called) pathogen-free rats.** — Nature, Lond. **188,** 506-507. **2201**

Spontaneous cytomegalic inclusion bodies were demonstrated in the lacrimal glands of rats born by caesarian section and reared under sterile conditions. It was suggested that so-called "pathogen-free" or "germ-free" animals may actually carry infective viruses, although their presence may not necessarily be detectable, clinically, microscopically or serologically.—E.G.

Gill, E. & Stone, H. D. (1960). **Newcastle disease: preliminary field tests of beta-propiolactone-killed vaccine.** — Avian Diseases **4,** 543-544. **2202**

Field trials of a vaccine killed by β-propiolactone in 4 areas of the U.S.A. and in Nigeria revealed a potency similar to that of live vaccines against Newcastle disease. It is not yet available commercially.—M.G.G.

Dardiri, A. H., Yates, V. J., Chang, P. W. & Fry, D. E. (1961). **Newcastle disease immunity in broilers and caponettes vaccinated with killed-virus and live-virus vaccines.** — Amer. J. vet. Res. **22,** 93-98. **2203**

A single dose of killed or living Newcastle disease vaccine at the age of 2 or 4 weeks did not protect 128 chicks adequately against intratracheal challenge with virulent virus 4–20 weeks later. But all of 252 chicks immunized with killed vaccine at 2 weeks followed by killed or living vaccine at the age of 4–6 weeks were immune to challenge up to the age of 22 weeks. Chicks given both living Newcastle disease vaccine and infectious bronchitis vaccine when 2 weeks old developed infections of the air sacs, from which *Escherichia coli* was isolated (but not PPLO).

—M.G.G.

Sharpless, G. R., Levine, S., Davies, M. C. & Englert, M. E. (1961). **GAL virus: its growth cycle in tissue culture and some of its properties.**—Virology **13,** 315-322. [Authors' abst. modified.] **2204**

The growth cycle of GAL virus [see *V.B.* **31,** 1551] as determined by plaque assay was correlated with electron microscope observations of infected cells. It had a long latent period and a long growth cycle. It was produced only within the cell nucleus, where it accumulated. The virus was polyhedral and ether-stable, and it resembled adenovirus. Data concerning its stability upon storage are included.

Macpherson, I. A. (1960). **Plaque formation by an orphan virus of fowls.**—Nature, Lond. **188,** 1213-1214. **2205**

GAL virus was examined by an improved method of plaque assay using an overlying agar suspension of liver cells from 17-days-old chick embryos. The size of the plaques ranged from 0·5 to 5 mm. in diameter.—M.G.G.

Gagliardi, G. (1960). Azione del tuorlo incluso nel vaccino pseudopestoso inattivato. **[Effect of the yolk in Newcastle disease vaccines prepared from embryonated eggs.]** — Vet. ital. **11,** 851-867. [Summaries in English, French and German.] **2206**

It is concluded that Newcastle disease virus grown in eggs from non-immunized hens does not undergo biological changes when mixed and homogenized with the corresponding egg yolks; if grown in eggs from hens with specific immunity it loses some of its infectivity and immunogenicity when mixed and homogenized with the corresponding yolks—this being due, in varying degrees, to specific antibodies in the yolks. Eggs of hens vaccinated 3 months previously had HI and yolk neutralizing titres of 1 : 80 and 1 : 290 respectively. Vaccines prepared from these eggs and their yolks were one-third as effective as control vaccines without the egg yolks, in so far as HI titres and infective and protective values were concerned. It is considered that the yolk should not be included in the vaccine.—T.E.G.R.

Mason, E. J. & Kaufman, N. (1961). **Factors affecting the cytotoxic reaction between Newcastle disease virus and cells in vitro.**—Brit. J. exp. Path. **42,** 118-130. [Abst. from survey of paper, p. i.] **2207**

The authors studied the toxic effect of NDV on five cultured cell strains. They found that adsorption of virus to cell, necessary for subsequent toxic effect, occurred equally well at 4° or 35°C., and, after 3 min., could not be reversed by immune serum. Receptor-destroying enzyme prevented adsorption if at least 500 units were applied to each culture of 3–4 x $10^5$ cells. On heating or ultra-violet irradiation, viral properties were lost in the following order: infectivity, toxicity, haemagglutinin.

Kovac, W. (1961). Zur Entwicklung und Spezifität der Psittakose im Tierexperiment. I. Mitteilung. **[Pathogenesis of psittacosis and tissue-specificity of the virus: experiments on mice.]**—Zbl. Bakt. I. (Orig.) **181,** 175-209. [Summaries in English, French, Spanish and Russian.] **2208**

Mice infected intranasally with psittacosis virus were killed between one hour and 7 days later. Histological examination of the lungs revealed 3 stages in the development of the disease: (a) non-specific irritation of the alveolar epithelium during multiplication of the virus; (b) sudden onset of the specific reaction—interstitial proliferation and alveolar exudation; (c) unsuccessful regeneration leading to interstitial fibrosis. As P.M. changes were found also in the brain, heart, liver, spleen, kidney and adrenal gland, it was concluded that the virus invades tissues derived from all three germ layers.—M.G.G.

Boulanger, P. & Bannister, G. L. (1961). **Comparison of the indirect and "implemented" direct complement-fixation test in the diagnosis of turkey ornithosis.**—Canad. J. comp. Med. **25,** 8-12. [Authors' summary modified.] **2209**

The indirect and the "implemented" direct c.f. tests were compared on sera from naturally and experimentally infected turkeys. The two tests gave comparable results on experimental sera that were frozen immediately after collection and stored in this way until time of testing. With low titre field sera which were not frozen and which were in transit for many days before being tested, greater discrepancies were obtained. But high titre sera compared favourably in the two tests.

Snoeyenbos, G. H. & Basch, H. I. (1960). **Further studies of virus hepatitis of turkeys.**—Avian Diseases **4,** 477-485. **2210**

Seventeen further outbreaks of this disease have been diagnosed in Massachusetts since it was first reported in 1959 [see *V.B.* **30,** 2217] Mortality varied from 1% to 25% in poults less than 5 weeks old, but in turkeys above that age the disease was subclinical. The virus was isolated regularly from naturally and experimentally infected poults, but not from spontaneous cases in adult birds, and only occasionally from adults infected i/v. Resistance to re-infection after 21 or 37 days was demonstrated in poults, although neutralizing and c.f. antibodies were not detected. No evidence of infection was found in 49 poults hatched from eggs that had been dipped in infected liver suspension. The virus was isolated from a retrogressive ovarian follicle of a turkey hen on the 7th day after i/v infection.—M.G.G.

Olsen, M. W. (1961). **Rous sarcoma virus associated with parthenogenesis in turkey eggs.** — Nature, Lond. **190,** 191-192. [Author's summary modified.] **2211**

Rous sarcoma virus tended to increase the incidence of macroscopically observable development in unfertilized turkey eggs.

Temin, H. M. (1961). **Mixed infection with two types of Rous sarcoma virus.**—Virology **13,** 158-163. [Author's abst. modified.] **2212**

A study was made of the consequences of the introduction, by superinfection or mutation, of a marked type of Rous sarcoma virus into chick embryonic cells already infected with it. Characters controlling cell morphology (Temin, 1960) were used as markers.

After superinfection, cells release virus of the original type only, of the super-infecting type only, or of both. Over ten generations after superinfection, single cells can release two types of virus. Cells which release both viruses can have the morphology of either type; the virus that controls cell type can be either the original or the superinfecting virus.

It was found that the proportion of mutant virus and the proportion of mutant cells in clonal populations of Rous sarcoma cells was similar.

Rubin, H. (1961). **The nature of a virus-induced cellular resistance to Rous sarcoma virus.**—Virology **13,** 200-206. [Author's abst. modified.] **2213**

An avian leucosis virus (RIF) which occurs in normal chick embryos infects cells in tissue culture and renders them resistant to infection with RSV. A RIF-infected culture is composed of cells which are all of enhanced resistance to RSV infection but which can be infected by single RSV particles. Prior infection of a cell with RIF merely reduces the probability for successful infection by RSV by a factor of 40 or greater.

Crawford, L. V. & Crawford, E. M. (1961). **The properties of Rous sarcoma virus purified by density gradient centrifugation.**—Virology **13,** 227-232. [Part of authors' abst.] **2214**

Examination of shadowed preparations, and virus assays, revealed that the number of physical particles per infectious unit was 750 for tissue culture fluid and 1,200 for purified preparations. Analysis showed that the particles contained an average of $9{\cdot}5 \times 10^6$ molecular weight units of ribonucleic acid, of which the base composition has been determined.

Anon. (1961). **Prospects for a viral antibiotic.** —Lancet, January 7th, 36. **2215**

Four substances which inhibit the multiplication of viruses without damaging the cells of the host are: the hydroxybenzyl derivative of benzimidazole, active against poliomyelitis, Coxsackie, and ECHO viruses; N-ethylisatin β-thiosemicarbazone, active against alastrim virus [see *V.B.* **30,** 3240]; helenine, active against influenza and encephalomyocarditis viruses [see *V.B.* **24,** 1523]; and interferon, with an extremely broad antiviral spectrum. The main obstacle to the use of interferon is the difficulty of manufacturing large quantities by a biological process.—M.G.G.

Weiner, D., Baker, E. F. & Mason, H. C. (1961). **Q fever antibodies in dairy cattle and in humans in Washington State.**—Publ. Hlth Rep., Wash. **76,** 257-260. [Authors' summary modified.] **2216**

In a screening survey, 4,150 herd milk samples from 26 of the 39 counties in the State of Washington were examined for Q fever antibodies by the capillary agglutination test: 822 (20%) were positive. 2,860 sera from residents of nine counties were also examined and 95 (3%) were positive.

Winn, J. F., Abinanti, F. R., Lennette, E. H. & Welsh, H. H. (1961). **Q fever studies. XXII. Inoculation of sheep by the intestinal route.** — Amer. J. Hyg. **73,** 105-113. [Authors' summary modified.] **2217**

Six sheep were inoculated with *R. burneti* directly into the intestinal tract. Rickettsiae were subsequently encountered in the secretions or excretions of 5 of the animals and, at autopsy, in the tissues of 2 of them. The significance of such shedding of rickettsiae, and the influence of pregnancy and parturition on shedding, are discussed briefly. Although intestinal infection appears to be possible, the relative importance of this route cannot be assessed from this limited experiment.

*See also abstr.* **2393** (report, Committee for Colonial Research); **2395** (report, Uganda); **2396** (report, Nyasaland); **2397** (report, Bulgaria); **2398** (report, Poland); **2399** (report, Netherlands); **2400** (book, rabies); **2401** (book, virus research); **2403** (book, advances in veterinary science, vol. 6).

## IMMUNITY

Patterson, R. (1960). **Investigation of spontaneous hypersensitivity of the dog.** — J. Allergy **31,** 351-363. **2218**

A 2-year-old spayed Fox Terrier developed lacrimation, conjunctivitis and severe pruritus in two successive summers (August-September) at the time when ragweed was pollinating. The dog proved to be sensitive to ragweed, but not to grass or tree pollen. Inhalation of sufficient antigen caused asthma.—R.M.

Dvořák, M. (1960). Experimentální studie vzniku diathelické imunity u krav. **[Experimental study of diathelic immunity in cows.]** —Sborn. vys. Šk. zemědělsk. Brno Ser. B. **8,** 357-362. [In Czech. Summaries in English and Russian.] **2219**

Four of seven cows developed local lesions after infection by the teat canal either with 0·2 ml. of a suspension containing 3 million *Salmonella gallinarum* organisms, or by applying 1 ml. of the suspension to the mouth of a calf immediately before sucking. Specific agglutinins at titres of 1 : 20–1 : 320 were demonstrable in the milk 12 hours to four days after infusion, the size of the titre being in an indirect ratio to the amount of milk produced. In five of the cows positive agglutination reactions were also obtained with milk samples from non-infected quarters, although usually later and at titres not exceeding 1 : 20–1 : 40. Doses of 80,000 *S. gallinarum* organisms produced considerably lower titres and only in samples from infected quarters. There were no mammary lesions nor was the milk quality in any way affected. The role of intramammary antibody production in diseases of the calf and the udder was discussed. [See also *V.B.* **27,** 3022.]—E.G.

Carter, B. G. & Cinader, B. (1960). **Some experiments on acquired immunological tolerance in the goat.**—Ann. N.Y. Acad. Sci. **87,** 363-379. **2220**

New-born goats were injected with human albumin prepared by ether fractionation. An i/p inj. was given either immediately after birth or in 9 separate injections of 100 mg., beginning immediately after birth and thereafter at intervals of 24 hours. A second group of animals born during the same period was not injected at birth. Seven to 11 weeks after birth both groups were given a series of 3 i/v immunizations; they were bled 12 days after the last injection. Five weeks after the last injection a second course of immunizations was carried out, and the animals were bled 5 days after the end of this immunization. The sera obtained were examined for antibody by the agglutination of tanned erythrocytes sensitized with human albumin, and by quantitative precipitin assays. Data obtained by agglutination assay showed no difference in antibody titre between animals injected at birth and animals not injected. On the other hand, quantitative precipitin assays indicated a completely different response of the two groups of goats: animals injected at birth did not have any detectable antibody, while every one of the animals not injected at birth had synthesized precipitable antibody. Perhaps the animals injected at birth had responded to human albumin, but the resulting antibody was not of the precipitating kind and therefore remained undetected by the precipitin test.—R.M.

Medawar, P. B. (1961). **Immunological tolerance.**—Nature, Lond. **189,** 14-17. **2221**

This article is the substance of the Nobel Lecture delivered at Stockholm in December 1960, in which M. described and discussed immunological tolerance, runt disease, immunological paralysis, tolerance of tissue grafts after total irradiation, and inhibition of cutaneous allergy to drugs by oral administration. M. considered that tolerance is due to a central failure of the mechanism of immunological response and not to some intercession at a peripheral level, that the tolerant state depends on the continuing presence of the antigen that provoked it, and that the only substances capable of exciting auto-immune reactions are those which never normally have access to centres of immunological response.—M.G.G.

Festenstein, H. & Bokkenheuser, V. (1961). **Attempted induction of immunological tolerance in rabbits using living Treponema pallidum.**—Brit. J. exp. Path. **42,** 158-165. [Abst. from survey of paper, p. ii.] **2222**

The authors inoculated pregnant rabbits subcutaneously with *Treponema pallidum.* The young showed no sign of disease or of immune tolerance towards the organism. Inoculation of rabbits within 5 hours of birth caused an illness progressing to death within 16 weeks. Arrest of this illness with penicillin 5 weeks after infection did not lead to immune tolerance.

Dineen, J. K. (1961). **Acquisition of graft versus host tolerance.**—Nature, Lond. **189,** 680-681. 2223

New-born C3H mice were injected i/v within the first 24 hours of life with spleen cells from adult C57B1 mice and died within 3 weeks, whereas new-born C57B1 mice, given similar doses of C3H adult spleen cells developed typical runt disease [*V.B.* **30,** 744]. Details were given of passages made by removal of spleen from affected sucklings 6–21 days after inoculation. Incidence of runting was greatly reduced or absent in passages. Tests for chimeric cells were made at the time of passage and also on spleens of unaffected passage recipients. A table gives the incidence of runting and chimerism on passage of spleen cells from chronic and acute runts.—E.G.

Gilmour, D. G. (1960). **Blood groups in chickens.**—Brit. poult. Sci. **1,** 75-100. [Summaries in French and German. Author's summary modified.] 2224

The genetic basis of the antigens of the red blood cells which determine the blood groups of chickens was worked out in three series of investigations, using iso-immune sera. Firstly, Todd established that the antigens were inherited, then Briles *et. al.* postulated specific genes determining them, and Gilmour independently identified some of the same loci, and others. Most if not all the loci have multiple alleles. The B locus appears to show extreme multiple allelism; the genetic nature of this is discussed in comparison with the Rh series of man and other complex systems. The A and E systems of the fowl are closely linked (about 1% crossing over) but little is known of the linkage relationships of the antigen loci with other markers, although there is probably at least one antigen locus on each chromosome.

The antigen loci tend to continue segregating at high levels of inbreeding, and there is evidence, at least for some loci, that this is mediated by a heterozygote advantage in survival, with egg production, fertility, hatchability and low mortality as contributory factors.

In outbred populations the antigens are in a state of balanced polymorphism; possible genetic mechanisms accounting for this are discussed in relation to their evolutionary significance.

Because of their connexion with survival value, the blood group antigens have some usefulness in commercial poultry breeding.

Scheinberg, S. L. & Reckel, R. (1961). **Effects of oestrogen on somatic variation of an erythrocyte agglutinogen in chickens.**—Nature, Lond. **189,** 295-296. 2225

Somatic variation is discussed and results are given of a survey of seed extracts suitable for typing fowl r.b.c. The extracts detected a substance designated *"Hi"*. They agglutinated only r.b.c. of sexually mature females. The r.b.c. of 54 males tested were non-reactive; those of 75 of 129 females were. Results of studies on reactivity in relation to egg production and pedigree are discussed.—T.E.G.R.

Tucker, E. M. (1961). **An attempt to produce haemolytic disease in lambs.**—Nature, Lond. **189,** 847-848. 2226

A ewe, previously immunized with the blood of a ram, was subsequently mated to this ram and given a booster injection of the ram's blood during pregnancy, resulting in a serum antibody titre of 1 : 16,000. Twin lambs, born after a normal pregnancy, did not develop haemolytic disease, although their erythrocytes were sensitized by the ingestion of colostral antibodies. Details were given of serological examination of blood samples from dam and offspring and colostrum samples, taken before and at various intervals after first ingestion of colostrum.—E.G.

*See also absts.* **2041** (staphylococcal, in rabbits); **2049-2054** (TB.); **2085-2097** (brucellosis); **2100-2103** (leptospirosis); **2105** (tetanus); **2107-2108** (vibriosis); **2110** (combined tetanus-leptospirosis vaccine); **2119** (gamma globulins); **2130** (non-complement-fixing immune system); **2135** (antigenic relationships between Trypanosoma brucei strains); **2149** (toxoplasmosis); **2151-2158** (F. & M. disease); **2161 and 2164** (rabies); **2169** (emulsified vaccines); **2176** (rinderpest); **2178** (bovine influenza); **2192** (suggested interference by canine hepatitis virus with avianized distemper vaccine); **2193** (trivalent distemper-hepatitis-canicola vaccine); **2196** (feline pneumonitis); **2197-2198** (mink virus enteritis); **2202-2207** (Newcastle disease); **2208-2209** (psittacosis); **2247 and 2249** (lungworms); **2386** (immunofluorescent staining).

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Parker, A. H. (1960). **The breeding habits of tsetse flies.**—Sudan J. vet. Sci. anim. Husb. **1,** 92-104. 2227

Most species prefer densely shaded breeding sites with dry soil and uneven surface. *Glossina palpalis* and *G. swynnertoni* deposit larvae whilst resting on the soil surface. On one occasion *G. morsitans* was seen to larviposit from a place above ground level. *G. palpalis* occupies the breeding site for

only a short period. Cool breeding places were avoided by *G. palpalis* and *G. morsitans*. There was evidence that the choice of site by *G. morsitans, G. palpalis, G. tachinoides, G. pallidipes* and *G. swynnertoni* was influenced by the season. Larvae of *G. palpalis* and *G. swynnertoni* avoid bright light.—E.G.

Brown, A. W. A. & Carmichael, A. G. (1961). **Lysine as a mosquito attractant.** — Nature, Lond. **189,** 508-509. **2228**

Under experimental conditions L-lysine proved attractive to *Aedes aegypti, A. stimulans* and to *Culex pipiens*. The concentration in human blood and sweat is about 27 μg./ml. Since it may be distilled from aqueous solution and is attractive at 1 p.p.m., L-lysine could be the main attractive factor of mammalian blood and body emanations. —E.V.L.

Hoogstraal, H. & Kaiser, M. N. (1961). **Ticks from European-Asiatic birds migrating through Egypt into Africa.** — Science **133,** 277-278. [Authors' summary.] **2229**

From 321 of 7,381 birds (28 species), 504 immature European-Asiatic ticks were collected: *Ixodes frontalis, Haemaphysalis punctata, Haemaphysalis sulcata, Hyalomma* spp. (probably mostly *m. marginatum*). *Hyalomma aegyptium,* and *Hyalomma m. marginatum*. Many additional detaching ticks were eaten by the hosts. Uninfested bird species numbered 29 (998 individuals).

Whitehead, G. B. & Baker, J. A. F. (1961). **Acaricide resistance in the red tick, Rhipicephalus evertsi Neumann.**—Bull. ent. Res. **51,** 755-764. [Authors' summary modified.] **2230**

Field trials indicated an increase in tolerance by populations of the tick at Tayside, South Africa to toxaphene, BHC and dieldrin, but not to sodium arsenite or DDT. Similar results were obtained in the laboratory when Tayside ticks were compared with other populations known to be sensitive to insecticides. Larvae had a high degree of resistance to toxaphene and BHC but no increased tolerance to sodium arsenate, Delnav, Sevin or DDT could be detected. This pattern of cross-resistance is similar to that in resistant populations of *Boophilus decoloratus*.

Walton, G. A. (1960). **A tick infesting the nostrils of man.**—Nature, Lond. **188,** 1131-1132. **2231**

Immature ticks of the genus *Amblyomma* were removed from the nostrils of three persons during visits to tropical rain forests in Uganda. It was suggested that they were nymphae of *A. paulopunctatum,* which in its mature form parasitizes the giant forest hog *(Hylochoerus meinertzhageni)*. It is believed that these nymphae normally infest nostrils of anthropoid apes.—E.G.

*See also absts.* **2393** (report, Committee for Colonial Research); **2396** (report, Nyasaland); **2402** (book, avian parasites).

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

Wikerhauser, T. & Bartulić, V. (1961). Imunobiološka dijagnostika fascioloze. I. O vrijednosti somatskog, polisaharidnog i metaboličkog antigena za intrakutani test kod goveda. [**Immunobiological diagnosis of fascioliasis. I. Fluke extracts, polysaccharide fractions and metabolic products of flukes as antigens for the skin test.**]—Vet. Arhiv **31,** 1-7. [In Croat. Summaries in English and French.] **2232**

The antigens available were: an extract in saline-phenol soln. of dried and powdered *Fasciola hepatica,* a polysaccharide fraction of such extracts, and an antigen from metabolic products of live flukes, kept for 24 hours in sterile Tyrode soln. at 38°C., prepared by freeze-drying of supernatant fluid after centrifugation. Antigens and control solutions were injected intradermally into the caudal fold in doses of 0·2 ml. and results read 30 min. later. A weal of 14–17 by 22–27 mm. with a central red patch of 4–14 by 6–22 mm. was considered a positive reaction. Smaller swellings without the red patch were occasionally seen in cattle free from fascioliasis. In 225 cattle aged 2 months to 12 years, results of skin tests were confirmed P.M. With antigen prepared from metabolic products infestation was diagnosed in 79·5%, with saline-phenol extract in 63% and with polysaccharide in 39% of cattle with fascioliasis.—E.G.

Ueno, H., Watanabe, S. & Fujita, J. (1960). [**Anthelmintics for the common liver fluke. III. Comparison of anthelmintic action and side-effects in sheep of bithionol and hexachlorophene.**] — J. Jap. vet. med. Ass. **13,** 480-483. [In Japanese. Summary in English.] **2233**

Fifteen sheep with fascioliasis were

treated with a single oral dose of 35–300 mg./kg. of bithionol, and 15 with 10–75 mg./kg. of hexachlorophene. P.M. examination revealed that almost all flukes were expelled by a dose of 75 mg./kg. of bithionol, and by 10 mg./kg. of hexachlorophene. Bithionol at 35 or 50 mg./kg. had no effect. Side effects were caused by 100 mg./kg. or more of bithionol and by 20 mg./kg. of hexachlorophene. It was concluded that bithionol is safer though less potent than hexachlorophene.—M.G.G.

Eikmeier, H. & Kamel, S. H. (1961). Experimentelle Untersuchungen über die Verträglichkeit von "Hetol", einem neuen Leberegelmittel, bei Schafen. [**Toxicity for sheep of bis(trichloromethyl) benzene, a drug active against liver flukes.**]—Tierärztl. Umsch. **16,** 79-81. 2234

Oral therapeutic doses of 150 mg./kg. body wt. of "Hetol", an anthelmintic against liver fluke, had no toxic effect in 27 healthy adult ewes. [See also *V.B.* **30,** 3619; **31,** 809.] —E.G.

Lämmler, G. (1961). Die kombinierte Behandlung des Leberegel- und Magen-Darmwurmbefalls bei Schafen mit Hetol und Phenothiazin S. [**Combined treatment of liver fluke and gastro-intestinal helminths in sheep with bis(trichloromethyl) benzene and phenothiazine.**]—Dtsch. tierärztl. Wschr. **68,** 169-172. [Summary in English.] 2235

Trials in rabbits, rats and sheep revealed that bis(trichloromethyl) benzene eradicated *Fasciola hepatica* when given orally in combination with phenothiazine. The combined dose recommended for sheep was 155–160 mg. of bis(trichloromethyl) benzene and 380–400 mg. of phenothiazine per kg. body weight.—M.G.G.

Pitchford, R. J. (1961). **Observations on a possible hybrid between the two schistosomes S. haematobium and S. mattheei.** — Trans. R. Soc. trop. Med. Hyg. **55,** 44-51. [Author's summary modified.] 2236

P. described observations which suggest that hybridization is occurring naturally in man between *S. haematobium* and the animal schistosome *S. mattheei* in parts of the eastern Transvaal.

The epidemiological conditions are briefly mentioned, as are the implications.

Nelson, G. S. (1960). **Schistosome infections as zoonoses in Africa.**—Trans. R. Soc. trop. Med. Hyg. **54,** 301-316. Discussion 317-324. 2237

Ten species or varieties of schistosomes have been reported from man in Africa. *S. haematobius* is primarily a parasite of man. It has also been found in a few rodents and in a baboon. *S. bovis, S. mattheei* and *S. margrebowiei* are primarily parasites of Artiodactyla. They have all been reported from man. *S. mansoni* was isolated from only one of 226 rodents but from 35 of 64 baboons in areas of endemic schistosomiasis in East Africa. The baboons probably derived the infection from man, but it is possible that they could maintain it and become a new source of infection for man.—M.G.G.

Litviško, N. T. & Pustovar, J. P. (1960). [**Symptoms and pathology of Bilharziella polonica infestation in domestic ducks.**] — Helminthologia **2,** 151-157. [In Russian. Summaries in English, French and German.] 2238

*Bilharziella polonica* was found P.M. in mesenteric vessels, liver and gall bladder, less often in heart, lungs, pancreas, kidneys, spermatic cord and vessels of skeletal muscles in 47 of 49 ducks. Characteristic were enlargement of heart, intestinal haemorrhages particularly in the small intestine, and enlarged, friable liver. There was perivascular oedema and increased vascular permeability. Clinical symptoms were described.—E.G.

Lazzaro, D. A. (1961). Cisticercosis bovina. [**Bovine cysticercosis.**]—Gac. vet., B. Aires **23,** No. 129 pp. 19-21. 2239

Of 200 cattle with cysticerci in the masseter muscles, only 20 had them in the heart also.—M.G.G.

Dissanaike, A. S. & Paramananthan, D. C. (1960). **On the occurrence of Echinococcus granulosus (Batsch, 1786) in a Ceylon jackal.** —Ceylon vet. J. **8,** 82-87. 2240

Presence of seven mature *E. granulosus* in a jackal, shot in Ceylon, indicated the existence of a sylvatic cycle of this parasite, with free-living herbivorous animals, like deer or buffalo, as possible intermediate hosts. —E.G.

Weiss, P. (1960). Nález pásomnice Thysaniezia ovilla (Rivolta 1878, Skrjabin 1926) u oviec jesenickej oblasti. [**Thysaniezia ovilla in sheep in Czechoslovakia.**]—Sborn. vys. Šk. zeměděl sk. Brno Ser. B. **8,** 501-503. [In

Slovak. Summaries in German and Russian.] 2241

The origin of this tapeworm, found in five sheep in Northern Moravia, was traced to sheep imported from Balkan countries 5–6 years previously. Morphology of the parasite is described.—E.G.

Guilhon, J. & Graber, M. (1960). Recherches sur l'activitité du $G_4$ à l'égard des principaux cestodes parasites du mouton. **[Action of dichlorophen on the principal cestodes of sheep.]** — Rev. Elev. **13,** 297-304. [Summaries in English and Spanish.] 2242

Dichlorophen was given by mouth to about 50 sheep infested with 6 species of cestodes. A single dose of 300 mg./kg. eliminated regularly *Moniezia expansa* and *Stilesia globipunctata,* less constantly *Avitellina centripunctata,* and had little or no effect on *Stilesia hepatica, Moniezia benedeni* and *Helicometra ovilla.* The drug was more effective when the sheep were allowed no food for 20–24 hours before and neither food nor water for 2 hours after treatment.—M.G.G.

Castel, P., Graber, M., Gras, G. & Chhay-Hancheng. (1960). Action de l'arséniate d'étain sur quelques cestodes et nématodes du poulet. **[Action of tin arseniate against certain cestodes and nematodes of fowls.]**— Rev. Elev. **13,** 281-296. [Summaries in English and Spanish.] 2243

After starvation for 20 hours, a single oral dose of 130 mg. of tin arseniate given in capsule form, rid fowls entirely of *Raillietina tetragona, R. cesticillus* and *Ascaridia styphlocerca. Hymenolepis carioca* was eliminated by a dose of 180 mg. and *R. echinobothrida* by one of 200 mg. *Subulura brumpti, Gongylonema congolense* and *Acuaria spiralis* were not affected. The $LD_{50}$ was 860 mg./kg. Fowls should not be killed for food for 8 days after treatment, on account of the arsenic content of the flesh. The arsenic content of the eggs of hens dosed with 200 mg. remained above 0·1 mg./kg. for 5 days after treatment; further studies on eggs of treated fowls are being made. —M.G.G.

Walley, J. K. (1961). **"Promintic"—a new anthelmintic for sheep and cattle.**—Vet. Rec. **73,** 20. 2244

A preliminary note on the efficacy of subcutaneous or oral doses of 200 mg./kg. body wt. of 2-(β-methoxyethyl) pyridine against intestinal nematodes in ruminants. Good results were claimed in 513 sheep and 350 cattle, naturally infested with species of *Trichostrongylus, Nematodirus, Cooperia, Ostertagia* and *Trichuris.*—E.G.

Scarnell, J. (1961). **Local reactions following subcutaneous injection of "Promintic".** — Vet. Rec. **73,** 278-279. 2245

Four pony yearlings reacted at the site of s/c injection of 20 ml. of an aqueous soln. of the anthelmintic methyridine. In 3 the reaction was pronounced, and in 2 necrosis and sloughing occurred.—M.G.G.

Pouplard, L., Pècheur, M. & Grégoire, C. (1961). Action du Ruélène sur les trichostrongyles gastro-intestinaux du mouton. **[Action of Ruelene on gastro-intestinal trichostrongyles in sheep.]**—Ann. Méd. vét. **105,** 8-13. 2246

The number of trichostrongyle ova was greatly reduced in the faeces of 4 of 5 sheep given 2 oral doses of 125 mg. of Ruelene per kg. body weight 8 or 19 days apart. But daily treatment of 4 housed sheep with 13·5 mg./kg. for 6 weeks, followed by 27 mg./kg. for 6 weeks was ineffective.—M.G.G.

Wade, A. E., Swanson, L. E. & Fox, L. E. (1961). **Studies on infection and immunity with the lungworm, Dictyocaulus viviparus (Bloch). I. Active immunization of guinea pigs and rabbits.** — Amer. J. vet. Res. **22,** 123-127. 2247

Five rabbits that received injections of an antigen prepared from mature *D. viviparus* and lung exudate containing larvae, and emulsified with Freund's complete adjuvant, were challenged with viable larvae after 25 days. P.M. examination 7 days later revealed a total of 8 worms, compared with 46 in 5 control rabbits. The average c.f. titre of the immunized rabbits rose to 1 : 1,536. G.pigs given injections of freeze-dried 3rd stage *D. viviparus* and Freund's complete adjuvant had 50% less worms than controls 8 days after challenge. The average c.f. titre of the immunized animals rose to 1 : 108. G.pigs immunized with freeze-dried mature lungworms and adjuvant had 39% less worms than controls. The mean c.f. titre rose to 1 : 42.—M.G.G.

Ulyanov, D. (1960). **The comparative action of continuous administration of phenothiazine upon males and females of Dictyocaulus.** — Helminthologia **2,** 140-142. [In English.

Summaries in French, German and Russian.] 2248

Five sheep, infested with dictyocaulus, given daily doses of 0·5 g./kg. body wt. of phenothiazine for 26 days harboured 61 parasites as compared with 309 in untreated controls. In treated sheep 18% and in untreated 61% of these worms were females. —E.G.

Nelson, A. M. R., Jones, B. V. & Peacock, R. (1961). **Results of vaccination with lungworm (oral) vaccine in the field in 1960.**—Vet. Rec. 73, 153. 2249

Although parasitic bronchitis of cattle was a serious problem in practically all parts of the United Kingdom in 1960, evidence of the disease in immunized calves was seen on only 28 (0·35%) of 8,000 farms using the lungworm vaccine. On 3 farms it was complicated by cuffing pneumonia, on 3 more by cuffing pneumonia and clinical symptoms of infestation with gastro-intestinal parasites, and on others immunized and susceptible animals had been admitted to the same pasture.—M.G.G.

Surynek, J. (1960). Eosinofilní leukocytóza při uměl é invazi Ascaris suis. [**Eosinophilic leucocytosis in experimental ascaris infestation.**] — Sborn. vys. Šk. zeměděl sk. Brno Ser. B. 8, 315-322. [In Czech. Summaries in German and Russian.] 2250

Eosinophilic leucocytosis was characteristic of the migration of *Ascaris lumbricoides* in 17 rabbits and 11 pigs, each given single oral doses of 15,000–50,000 ova. —E.G.

Mozgovoi, A. A. & Hosik, A. F. (1960). [**Intra-uterine infection of puppies with Toxocara canis.**]—Trudy gel'mint. Lab. 10, 143-148. [In Russian.] 2251

In 2 unborn puppies and one stillborn puppy *T. canis* was found only in the liver; in 6 puppies aged 1–3 days only in the lungs; in 7 puppies aged 5–7 days in the lungs and/or digestive tract, and in one case in the liver; and in 12 puppies aged 8–45 days only in the digestive tract. The life cycle of the parasite was discussed.—M.G.G.

Ducker, D. J. (1961). **Spirocerca lupi (Rudolphi, 1809) as a cause of Marie's disease in the dog.** — Vet. Rec. 73, 242-243. 2252

*Spirocerca lupi* infestation is very frequent in the Cholo area of Nyasaland. Sixty dogs, shot in a rabies control drive, were all infested. In the early stages of infestation, treatment with three doses of 1 ml./kg. body wt. of lithium antimony thiomalate, at weekly intervals, appeared to be satisfactory. Hypertrophic osteoperiostitis (Marie's disease), in a dog which had a large, fibrous tumour in the thoracic cavity, was associated with spirocercosis. The long bones had calcified masses of spongy bone, typical for Marie's disease, particularly on radius, ulna, metacarpus and metatarsus.—E.G.

Hoag, W. G. (1961). **Oxyuriasis in laboratory mouse colonies.**—Amer. J. vet. Res. 22, 150-153. [Author's summary modified.] 2253

Piperazine, either as the citrate or as the hexahydrate, effectively rid mice of oxyurids (*Syphacia obvelata* and *Aspiculuris tetraptera*). The dosage was 200 mg./kg. body wt. daily in the drinking water for 7 days, this being repeated after a 7-day interval. Treatment was most successful when mice were removed to clean quarters during or immediately after drug administration.

It is suggested that rectal irritation caused by oxyurid infection may predispose mice to rectal prolapse, particularly when infection is accompanied by the stresses of shipping and drastic change of diet.

Jungmann, R. (1960). Elektrophoretische und hämatologische Untersuchungen an parasitenbefallenen Schafen. Verläufige Mitteilung. [**Electrophoretic and haematological examination of parasitized sheep.**] — Mh. VetMed. 15, Sonderheft No. 2. pp. 19-22. 2254

Details were given of the blood picture and serum protein values in eleven sheep, infested with haemonchus, trichostrongylus, nematodirus, cooperia, ostertagia, oesophagostomum and chabertia species or coccidia. Blood was taken from the jugular vein 14 hours after a meal. There was a decrease in leucocytes, and unsegmented neutrophiles were present. In serum, examined electrophoretically, albumins and alpha$_2$-globulins were reduced and beta and gamma$_2$-globulins increased.—E.G.

Skryabin, K. I. (1960). [**Fifteen years' activity of the helminthological laboratory of the USSR Academy of Sciences.**] — Trudy gel'mint. Lab. 10, 3-14. [In Russian.] 2255

The creation of this laboratory was initiated by K. I. Skryabin in 1942. Today it consists of 44 units, with a professional staff of 56. Fifteen expeditions have been sent to

different regions of the U.S.S.R., during which 5,000 mammals, over 11,000 birds and over 3,000 fishes were investigated for helminths. The laboratory has published important works on the taxonomy of trematodes and nematodes, the life cycle, reservoirs, biochemistry, and sensitivity to radiation of helminths, and problems of immunity to helminths.—M.G.G.

Hiepe, T. (1961). Die Aufgaben des Schafherdengesundheitsdienstes bei der Parasitenbekämpfung. (Ein Beitrag zur planmässigen Bekämpfung parasitärer Erkrankungen der Nutztiere.) **[Role of the sheep health service in parasite control.]**—Mh. VetMed. **16,** 101-104. **2256**

A sheep health service has worked in close co-operation with veterinarians in the Leipzig district since 1955. The health, feeding, management, and degree of parasitic infestation of each flock are investigated twice yearly. If losses occur, dead or diseased sheep are sent for examination, and the owner is advised on prevention and treatment. Gastro-intestinal strongylosis is controlled by rearing lambs separately or by treating the adult sheep with phenothiazine before introduction to spring pasture, lungworms are controlled by preventive measures and dosing with cyanacethydrazide, and ectoparasites by parasiticides in the form of powder or spray. —M.G.G.

*See also abstr.* **2050** (effect of fascioliasis on tuberculin sensitization in cattle); **2189** (role of lungworms in swine influenza transmission); **2329-2332** (toxicity of $CCl_4$ and phenothiazine synergists); **2395** (report, Uganda); **2402** (book, avian parasites).

## SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Ward, T. G. (1961). **Spontaneous tumors in the germfree mammal.**—Fed. Proc. **20,** No. 1. Pt. 1 p. 150. [Author's abst. modified.] **2257**

Spontaneous tumours occur in germ-free rats and mice at about the same rate as they occur in normal animals. The tumours are histologically similar to those which occur in normal rats and mice.

W. reported the isolation of epithelioid cells in tissue culture and their propagation.

Jacquier, C. (1961). Quelques considérations sur les cancers des voies respiratoires du chien. **[Cancer of the respiratory system in dogs.]**—Schweiz. Arch. Tierheilk. **103,** 129-139. [In French. Summaries in English, German and Italian.] **2258**

There were pulmonary metastases in ten dogs of various breeds and both sexes, aged 6–13 years, affected with mammary, prostatic or thyroid adenocarcinoma, pulmonary adenopapillomatosis and osteochondrosarcoma. Renal, hepatic and pulmonary metastases were present in one dog with osteofibrochondrosarcoma. Other neoplasms of the respiratory system were laryngeal reticulo-sarcoma and mediastinal lymphosarcoma.—E.G.

Young, S., Lovelace, S. A., Hawkins, W. W., Jr. & Catlin, J. E. (1961). **Neoplasms of the olfactory mucous membrane of sheep.**—Cornell Vet. **51,** 96-112. [Authors' summary modified.] **2259**

Intranasal neoplasms in sheep of two flocks are reported. Four cases are outlined and the pathological features described. The tumours had the appearance of adenocarcinomas of limited malignancy, and they are compared to similar lesions reported as occurring endemically in certain European flocks.

Ratcliffe, H. L. (1961). **Hepatitis, cirrhosis, and hepatoma in birds.**—Cancer Res. **21,** 26-30. **2260**

Two malignant hepatomas were found in about 8,000 birds that died in the Philadelphia Zoo from 1901 to 1946. From January 1946 to June 1960 seventeen examples of this tumour were found in some 2,300 birds, 16 of which were associated with subacute or chronic hepatitis of viral nature [as described by Lucke & Ratcliffe, *Trans. Ass. Amer. Physicians,* **62,** 83 (1949)].—R.M.

Bonaduce, A., Ajello, P. & Compagnucci, M. (1960). Alcune ricerche sul tumore di Sticker. **[Studies on Sticker's tumour.]** — Zooprofilassi **15,** 937-957. [Summaries in English and French.] **2261**

The aspects studied were: lysozyme activity of tumour tissue and serum lysozyme in affected or immunized dogs; normal or induced haemagglutination with filtered tumour extracts or with cell suspensions; metabolism of tumour cells: electrophoretic fractionation of aqueous extracts of tumour tissue; and tumour tissue transaminase. —T.E.G.R.

Pearson, E. G. (1961). **A primary pulmonary neoplasm in the goat.**—Cornell Vet. **51,** 13-23. [Author's summary modified.] **2262**

A type of pulmonary tumour found occasionally in Angora goats is composed of nests of squamous cells in a small amount of connective tissue stroma. The tumour arises from metaplastic bronchial epithelium. It shows no definite signs of malignancy and is considered to be a benign papilloma.

Theilen, G. H., Schalm, O. W. & Gilmore, V. (1961). **Clinical and hematologic studies of lymphosarcoma in a herd of cattle.**—Amer. J. vet. Res. **22,** 23-31. [Authors' summary modified.] **2263**

A high incidence of clinical bovine lymphosarcoma in a herd of purebred dairy cattle led to a study of this problem. Twice, at a 14-month interval, the entire herd was studied haematologically and examined clinically. Cows were allotted to three age groups with the following haematological classification:— (1) Of 22 cows aged 2 to 5 years, 5 were positive for lymphosarcoma; 2 were suspect. (2) Of 13 cows aged 5 to 9 years, 5 were positive for lymphosarcoma and 3 were suspect. (3) Of 15 cows aged 10 to 17 years, 7 were positive for lymphosarcoma and 1 was suspect. Haematological classification for the entire herd was 34% positive, 12% suspect, and 54% probably normal.

Lesbouyries, G. & Roger, H. (1960). Leucose aleucémique du canard. **[Aleukaemic leucosis in ducks.]**—Bull. Soc. vet. prat. **44,** 216-218. **2264**

The disease occurred in a flock of 156 adult ducks (all of which died) during 1954–1960. The course was 6–8 weeks and symptoms were emaciation, loss of equilibrium, diminished appetite and, in some cases, nasal haemorrhage. P.M. findings were: cachexia, purple or subicteric skin and underlying muscles, tumours in the liver and/or peritoneum, intestine and sublumbar arch, and a variable quantity of clear transparent fluid in the abdominal cavity. The liver tumours were of the adenomatous type, the abdominal tumours were spindle-cell sarcomas with necrotic foci. The disease is similar to "enzootic hepatitis with neoplasia in ducks", described by Stoenescu, V. *et. al.* (1958) [See *V.B.* **29,** 3539]. It is considered, however, that aleucaemic leucosis is a more appropriate term because: liver lesions are not a constant finding (in some birds only abdominal sarcomas were present); the disease may be characterized by liver tumours (most frequently); by sarcomas or by liver and abdominal tumours; the lesions are considered to be manifestations of a leucotic process.—T.E.G.R.

*See also abstr.* **2211-2214** (Rous sarcoma).

## NUTRITIONAL AND METABOLIC DISORDERS

Wright, M. A. (1961). **Haemoglobinuria from excessive water drinking.**—Vet. Rec. **73,** 129-130. **2265**

A brief report of haemoglobinuria that developed in 8 calves given access to an unlimited supply of drinking water for the first time in their lives. Three had a distended abdomen and were scouring, and one of these died. In the 7 calves that recovered the urine was normal 48 hours after the excessive drinking. It was suggested that the phenomenon is more common than the rare references suggest. [It is not stated why the calves had such a lively thirst.]—M.G.G.

Lodge, G. A. & McPherson, R. M. (1961). **Level of feeding during early life and the subsequent reproductive performance of sows.**—Anim. Prod. **3,** 19-28. **2266**

Four groups, each of 9 gilts, were reared from the age of 8 weeks on different planes of nutrition: (a) a high level rising to 8 lb. of meal daily at 200 lb.; (b) a medium level about 80% of (a); (c) a low level about 60% of (a); (d) the low level changing to the medium level at 14–16 weeks of age. From 200 lb. they were all fed to the medium scale. All the gilts reached puberty when about 25 weeks old. The average weight at puberty was 189, 154, 116 and 147 lb. respectively in the 4 groups. Gilts reared on the high and medium planes of nutrition displayed oestrus less strongly and were more difficult to mate than those reared on the lower planes. There was no difference in litter size at birth, mean weight of the piglets at 3 or 8 weeks of age or the total weight of the litters at weaning. —M.G.G.

Pařízek, M. (1960). Studie o vlivu pastvy jako činitele ovlivňujícího plodnost prasnic. **[Influence of pasture on fertility in sows.]**—Sborn. vys. Šk. zeměděl sk. Brno Ser. B. **8,** 281-306.

[In Czech. Summaries in German and Russian.] **2267**

From a comparatively small number of data collected, it appeared that lack of access of sows to pasture had no effect on the number of piglets per litter produced.—E.G.

Rosen, W. G., Fassel, H. & Nichols, R. E. (1961). **The etiology of legume bloat—non-volatile acids.**—Amer. J. vet. Res. **22,** 117-122. [Authors' summary modified.] **2268**

Aqueous extracts and expressed juices of forage plants caused considerable gas formation when added to rumen contents in Warburg vessels. Gas production was greater with extracts and juices from lucerne than from bluegrass.

Chemical studies of these forage preparations indicated that 40 to 60% of their gas-producing activity was attributable to three carboxylic acids, *i.e.*, citric, malonic, and succinic acids.

One-dimensional paper chromatography of fractions of the forage preparations indicated that the more active extracts of lucerne contained malonic acid, which was absent from the less active extracts of bluegrass. The authors discussed the possible aetiological significance of these carboxylic acids, particularly malonic acid, in legume bloat.

Bollwahn, W. (1961). Zur Harnsteinerkrankung der Schafe. **[Urolithiasis in sheep.]** — Tierärztl. Umsch. **16,** 8-11. **2269**

In 4 rams with urolithiasis the vermiform appendix of the penis was amputated and 300 i.u. of hyaluronidase was injected s/c, followed by 75 i.u. daily until urination became normal. Three were cured.—M.G.G.

Dekker, N. D. M. & Schotman, A. J. H. (1961). Het tetanie vraagstuk bij paarden en de mogelijkheid om door injecties van Complexon III tetanische verschijnselen op te wekken. **[Tetany in horses and the possibility of inducing tetanic symptoms by injection of disodium ethylenediamine tetra-acetate.]** — Tijdschr. Diergeneesk. **86,** 299-324. [In Dutch. Summaries in English, French and German.] **2270**

The authors described two cases of tetany associated with low blood calcium, which responded to i/v inj. of a solution containing Ca and Mg ions. Experimental single or repeated injections of adrenaline into two healthy horses did not reduce blood calcium, and did not support a theory that hypocalcaemia in horses with tetany might be caused by fear or anxiety. Two methods were used in attempts to induce hypocalcaemia in healthy horses. The first consisted of a single i/v inj. of sodium oxalate at 34 mg./kg. body wt., which produced, between 2½ and 5 min. after injection, depression of blood Ca from 11 to 6·9 mg.% without producing tetany (although it was toxic).

For the second method disodium ethylenediamine tetra-acetate (as "Complexon III") was employed to remove Ca ions from the blood: 42 g. in 1,200 ml. water were given by i/v drip infusion. This procedure lowered blood Ca to 4·2 mg.% and the horses developed tetany which disappeared when calcium salts were injected.—R.M.

I. Scott, P. P., Greaves, J. P. & Scott, M. G. (1961). **Nutrition of the cat. 4. Calcium and iodine deficiency on a meat diet.** — Brit. J. Nutr. **15,** 35-51. **2271**

II. Roberts, A. H. & Scott, P. P. (1961). **Nutrition of the cat. 5. The influence of calcium and iodine supplements to a meat diet on the retention of nitrogen, calcium and phosphorus.** — Ibid. 73-82. [Authors' summaries modified.] **2272**

I. Ten-week-old kittens fed on raw or cooked beef or sheep heart developed, after about 7 weeks, characteristic signs which included nervousness, ataxia and finally paralysis of the hind-limbs.

X-ray examination revealed marked osteoporosis (osteitis fibrosa) which was confirmed histologically; rachitic changes did not occur. Paresis was due to pressure collapse of vertebrae and other bony structures.

Raw heart contained adequate amounts of copper and of vitamins of the B complex, but some destruction of the vitamins occurred on cooking.

The thyroids of heart-fed kittens were hyperplastic and heavier than those of controls supplemented with calcium. Kidneys were also heavier and haemoglobin concentrations higher in heart-fed kittens.

Supplementation of the heart with sufficient calcium, as gluconate or carbonate, to give a Ca : P ratio of 1 : 1, prevented the occurrence of bone changes, and thyroids were less hyperplastic even after 8 months on the diet. Supplementation to give a Ca : P ratio of 1 : 2 was insufficient to prevent signs of deficiency.

Supplementation with 50 μg. iodine daily

prevented gross enlargement of the thyroid, and 100 μg. daily completely prevented hyperplastic changes.

Supplementation with vitamins A and D made no apparent difference to kittens, but some evidence was obtained that the offspring of cats that had not received these supplements would show signs of vitamin A deficiency.

Identical behavioural, skeletal and thyroid changes were observed in kittens given a low-Ca. high-protein purified diet, but not in controls receiving a similar diet with a Ca : P ratio of 1 : 1.

II. Intake, and output of nitrogen, calcium and phosphorus were measured over 8-day periods in seven kittens and four adult cats fed on raw heart with or without supplements of $CaCO_3$ and KI. Similar balances were carried out with a stock diet for comparison.

On the heart diet containing 0·04% Ca (dry weight), kittens and cats went into negative Ca balance.

On supplementation with $CaCO_3$, to give 0·84% Ca in the diet, Ca balances were positive. The proportion of Ca absorbed depended on the state of the skeletal store of Ca and on the iodine intake.

When the heart diet was supplemented with KI, at the rate of 100 μg. I/cat daily, losses of Ca were reduced; even on the low intake, positive Ca balances were obtained.

The results are discussed in relation to the part played by the thyroid and parathyroid glands in the regulation of Ca balance.

Flick, D. F., Douglass, C. D. & Gallo, L. (1961). **Biochemical studies of the chick edema disease.**—Fed. Proc. **20**, No. 1. Pt. 1 p. 75. [Authors' abst. modified.] 2273

The following are being studied in young male chicks fed a fat known to contain the "chick oedema factor" : body water partition, total blood volume, plasma volume, haematocrit, haemoglobin, non-protein nitrogen, creatine, urea, uric acid, blood glucose, and plasma electrolytes. The intracellular water was not appreciably changed nor were the total blood and plasma volumes markedly altered. The oedema was primarily interstitial. Haemoglobin levels and haematocrit values were low in advanced stages of the disease. Blood glucose levels decreased. The plasma levels of Na, K and Cl were not appreciably altered.

Bazhenov, A. N. & Feklistov, M. N. (1960). **[Oxidation-reduction processes in cows with acetonaemia or osteodystrophy.]** — Veterinariya, Moscow No. 11 pp. 58-60. [In Russian.] 2274

Disturbance of the oxidation-reduction processes was demonstrated in 20 cows that developed acetonaemia or osteodystrophy as a result of prolonged feeding of an unbalanced diet containing excessive protein. The features were increases in the blood content of acetone, acetoacetic acid, pyruvic acid and oxidised glutathione, hypoglycaemia, and a decrease in reduced glutathione.—M.G.G.

Allcroft, R. & Littlejohn, A. I. (1961). **The acceptability of calcined magnesite to cattle with a note on the response obtained in a case of hypomagnesaemia.** — Vet. Rec. **73**, 34-36. 2275

In a trial with 44 heifers, 2 oz. of calcined magnesite, whether in powder or granular form, was eaten readily when mixed thoroughly with sugar-beet pulp. When the magnesite was spread over the surface of the ration, or when the foodstuff was dry, the granular form was much more acceptable, the amount uneaten not exceeding 20%, compared with up to 90% of the powder. Subclinical hypomagnesaemia in a heifer responded to daily administration of 2 oz. granular calcined magnesite in the food with a rise in the serum Mg content from 0·9 mg.% to 1·6 mg.% in 33 hours, and to 1·8 mg.% in 57 hours.—M.G.G.

Hemingway, R. G., Ritchie, N. S., Inglis, J. S. S. & Peacock, R. M. (1961). **The use of magnesium bullets to control experimental hypomagnesaemia in ewes fed a low magnesium diet.**—Vet. Rec. **73**, 109-110. 2276

Five groups, each of 7 sheep, were fed a diet supplying 200 mg. of magnesium daily. The sheep in one group were given 2 magnesium bullets, in a second group 4 magnesium bullets, in a third drenched with 300 mg. of magnesium daily for 27 days, in a fourth drenched with 150 mg. daily for 27 days followed by 75 mg. daily, and a fifth group was left untreated. All except 4 of the 42 bullets were recovered from the reticulum of the treated sheep 6 weeks after administration. The average Mg content of the plasma in sheep with 4 bullets was 1·8 mg.% during the 6 weeks of the trial, in sheep given 150 or 300 mg. daily it fluctuated around 1·7 mg.% during the 27 days of drenching, in sheep with

2 bullets it declined after the 33rd day from about 1·8 to 1·53 mg.%, and in untreated sheep fell to 1·2 mg.%.—M.G.G.

I. Edwards, H. M., Jr. & Nugara, D. (1961). **Magnesium deficiency in the laying hen.** — Fed. Proc. **20**, No. 1. Pt. 1 p. 294. **2277**

II. Nugara, D. & Edwards, H. M., Jr. (1961). **Effect of calcium and phosphorus on magnesium metabolism in chicks.**—Ibid. p. 294. [Authors' absts. modified.] **2278**

I. Forty hens were divided into four dietary treatments: basal (0·6% P), basal 0·6% P plus 0·04% Mg, basal (1·2% P), and basal 1·2% P plus 0·04% Mg. The hens on the basal 1·2% P diet began to cease producing eggs after about 15 days. Egg production for the experimental period of 30 days for the four groups was: 23%, 30%, 10% and 62%, respectively. Distribution of Mg-28 in the Mg deficient and supplemented hens was studied. The soft tissues from the deficient hens contained more Mg-28 than the soft tissue from supplemented hens, while in the bones this was reversed. Concentration of Mg-28 in the tibia was as high as in some soft bones; this was unexpected since we have found in other experiments that there is a more rapid loss of Mg from the soft bones (in contrast to the tibia) in hens on a deficient diet.

II. The effect of high levels of Ca and P in the diet upon the growth, mortality and mineral deposition in the tibia of chicks receiving suboptimal and adequate levels of Mg was studied. High levels of both Ca and P (2·4% and 1·2%, respectively) decreased growth rate and caused high mortality when suboptimal levels of Mg were present in the diet. The detrimental effect of high P was much more severe. The level of dietary Mg had no observable effect on the quality of Ca, P or ash found in the tibia. However, the high levels of Ca and P caused a decrease in the quantity of Mg present in the tibia. The level of Ca and P in the diet did not appear to cause much change in the plasma Mg. Studies on the absorption of orally administered Mg-28 indicated that P interfered with Mg metabolism at the absorption site. Increasing the Ca level in the diet decreased the deposition of Mg-28 in the bone.

Bellis, D. B. (1961). **Supplementation of bacon pig rations by aureomycin and two levels of copper sulphate.** — Anim. Prod. **3**, 89-95. [Abst. from author's summary.] **2279**

In a trial to determine the effects of supplementing bacon pig diets with 125 and 250 p.p.m. copper (as copper sulphate) and/or aureomycin (14·4 p.p.m.), 288 pigs were fed *ad libitum* from 40–100 lb., with restricted feeding thereafter to bacon weight (200 lb.). Growth rate was increased by 125 p.p.m. copper, 250 p.p.m. copper, and aureomycin during the unrestricted feeding period. The magnitude of the responses was about the same in each case.

Bowland, J. P., Braude, R., Chamberlain, A. G., Glascock, R. F. & Mitchell, K. G. (1961). **The absorption, distribution and excretion of labelled copper in young pigs given different quantities, as sulphate or sulphide, orally or intravenously.**—Brit. J. Nutr. **15**, 59-72. [Authors' summary modified.] **2280**

Four pairs of piglets aged 12–13 weeks (averaging 17 kg.), were given labelled copper by mouth at two levels (about 21–24 mg. or 130–190 mg.), either as sulphate or as sulphide, and a fifth pair was intravenously injected with labelled Cu as sulphate. The pigs were kept individually in metabolism crates for 24 hours after the dose, and were then slaughtered. In another experiment with three pigs the distribution of labelled Cu in the blood and blood fractions for 72 hours after the administration of $^{64}$Cu by mouth or injection was studied.

The percentage of labelled Cu absorbed averaged 5·1 in three pigs given cupric sulphate and 1·7 in three pigs given pure cupric sulphide. Absorption rates decreased in pigs given sulphate, but not in pigs given sulphide, as levels of labelled Cu given by mouth increased. A diet supplemented with 250 mg. Cu/kg. as sulphate given for 3 weeks before administration of the labelled Cu had little effect on absorption rates. When Cu as sulphide was given in the same way, however, the absorption of labelled Cu appeared to be reduced.

Whether the pigs received the Cu by mouth, or by vein, Cu absorption occurred mainly in the small intestine and the colon, more in the intestine when sulphate was given and more in the colon when the sulphide was given. The stomach and caecum walls also contained appreciable quantities of labelled Cu.

The faeces were the major route of Cu excretion, only a small fraction occurred in the urine. Bile accounted for up to 40% of the excretion.

Labelled Cu appeared in the blood at a comparatively high level within 30 min. after oral administration of sulphate and at a lower level between 30 min. and 1 hour after sulphide. The blood levels continued to rise for 16–24 hours after oral administration of Cu, either as sulphate or sulphide, and then remained relatively stable for a further 48 hours. Injected $^{64}Cu$ was removed rapidly from the blood during the first 4 hours, and the level then remained stable up to 72 hours after injection. The liver was the major site of storage, containing 44–51% of the total dose of labelled Cu 24 hours after i/v inj.

The labelled Cu was transported mostly by the plasma proteins, the blood-cells transporting less. Over 48 hours, the labelled Cu in the albumin fraction remained a relatively constant proportion of the total in the plasma, whereas the proportion of labelled Cu in the globulin fraction increased.

There was wide variation in the levels of labelled Cu between different lobes and between different parts of the same lobe, but approximately the same distribution was found in all livers.

The response in rate of weight gain of pigs given high levels of Cu appears to be related to the amount of soluble copper in the gut, but these experiments do not indicate whether the site of action is systemic, enteric or both.

I. Carnes, W. H., Shields, G. S., Cartwright, G. E. & Wintrobe, M. M. (1961). **Vascular lesions in copper deficient swine.**—Fed. Proc. **20,** No. 1. Pt. 1 p. 118. **2281**

II. Weissman, N., Shields, G. S. & Carnes, W. H. (1961). **Connective tissue changes in aortas from pigs on a copper deficient diet.**—Ibid. p. 160. [Authors' absts. modified.] **2282**

I. Eleven of 19 pigs reared on evaporated milk supplemented with iron died at 55–131 days of aortic rupture. Aortic lesions were also found in 5 others that died and in 3 of 4 killed at 77–126 days. Medial lesions in arteries consisted of: (1) interlaminar deposits of hyaline and amorphous material; (2) focal breaks in elastic laminae; (3) local or dissecting intramural haemorrhages; (4) fibrous collagenous repair; and (5) rupture. All segments of aorta and coronary, brachial, brachiocephalic and pulmonary arteries were affected in variable degrees. No such lesions were found in 14 pigs on same diet supplemented with copper sulphate and killed at 109–142 days. The lesions suggest a fundamental defect of elastic tissue.

II. The authors compared the chemical composition of the aortas of 12 Cu-deficient pigs and 6 controls. The results indicated a reduction of insoluble elastin and an increase of extractable polymer. No change in collagen was indicated but an excess of non-N material was extracted from autoclaved extract of aorta from deficient pigs.

Groenewald, J. W. (1960). **Notes on trace element requirements according to a rapid survey of the Union.**—J. S. Afr. vet. med. Ass. **31,** 55-59. **2283**

It was suggested that certain defects in conformation in farm animals in South Africa were not inherited but were associated with mineral deficiencies. Examples given included phosphate deficiency in cattle and horses, characterized by hocks placed too far back, calcium deficiency in cattle by hind limbs placed too far forward and similar conditions in pigs and horses. Too straight a hock in young animals was regarded as indicative of manganese deficiency. Reddish brown instead of black hair in young Friesians was associated with copper deficiency, although this did not appear to be a specific sign. A more specific symptom was enlargement of the pastern joint and spavin of the hock, accompanied by unthriftiness, low milk yield and reduction in butter fat content and fertility.

Nitrogen fertilizers were stated to tend to increase the amount of amines in grass, which combine with copper, thus reducing the amounts of utilizable copper. Similar reactions may occur in grass grown on peat soils with too high a sulphur content. High molybdenum or zinc content of feed decreased utilization of copper.—E.G.

Pratt, C. W. M. & McCance, R. A. (1961). **Severe undernutrition in growing and adult animals. 6. Changes in the long bones during the rehabilitation of cockerels.** — Brit. J. Nutr. **15,** 121-129. [Authors' summary modified.] **2284**

Eight cockerels and a pullet undernourished for 6 months were given unlimited food and the structure of the long bones was investigated during recovery.

After an initial delay the femurs increased in length as fast of those of normal birds, but did not attain the normal dimensions. Radiological and histological changes were described.

Radiological changes in the metaphysis of

the long bones during the early weeks of recovery were conspicuous, and during the 3rd month double contours of the walls of the shaft were visible, which were due to the persistence of a vestigial shaft.

The structure of the vestigial shaft confirmed that it was formed during the period of undernutrition, and its position located which end of the bone was responsible for most of the growth in length.

The femurs of birds rehabilitated for over 4 months were indistinguishable structurally from those of normal adult birds, except that a vestigial shaft was frequently present.

It is suggested that the failure of the bones to reach their optimal length is due to disturbance in the growth cartilage during undernutrition.

Beaver, D. L. (1961). **Vitamin A deficiency in the germ-free rat.** — Amer. J. Path. **38,** 335-357. [Author's summary modified.] **2285**

In addition to the usual stigmas of vitamin A deficiency, germ-free rats exhibited severe hepatic, renal, and adrenal lesions, which were not present in ordinary rats on an identical diet. In other organs, the lesions in the germ-free group resembled those in ordinary animals, but were modified by the absence of infection and inflammation, so that atrophy, degeneration, and necrosis became the predominant features of the disease, although focal keratinizing metaplasia did occur. Death supervened independently of the germ-free state, and survival time was not increased.

Kohane, J., Okonowski, Z. & Cuperstein, E. (1960). **[Field cases of vitamin K deficiency in day-old chicks.]**—Refuah vet. **17,** 197-200. [In Hebrew. In English p. 216.] **2286**

A haemorrhagic syndrome in day-old chicks from 24 breeding farms was ascribed to vitamin K deficiency in the hens that were kept on slatted or wire floors and whose ration contained none or only 1½% lucerne meal. The blood clotting time of the chicks was prolonged during the first 2 days of life, but soon returned to normal, without treatment. The condition ceased after lucerne meal had been supplied to the hens at the rate of 3% of the diet. The authors failed to produce the condition experimentally by feeding a diet devoid of lucerne meal to hens, although the blood clotting time of the chicks was 20 min. or more. That of the hens was normal. They concluded that unknown factors as well as lack of lucerne meal and slatted and wire floors were involved.—M.G.G.

O'Halloran, M. W. & Skerman, K. D. (1961). **The effect of treating ewes during pregnancy with cobaltic-oxide pellets on the vitamin $B_{12}$ concentration and the chemical composition of colostrum and milk and on lamb growth.** —Brit. J. Nutr. **15,** 99-108. [Authors' summary modified.] **2287**

On a farm where adult sheep thrive but lambs suffer from cobalt deficiency annually, the effect of treating ewes with Co bullets during pregnancy on the vitamin $B_{12}$ concentration and the chemical composition of their colostrum and milk and on the growth of their lambs was examined.

The mean vitamin $B_{12}$ levels for colostrum of eight treated and eight control ewes were 102·1 and 35·2 $\mu$g./kg., respectively. For milk samples taken at 28 days after lambing the levels were 11·6 and 1·2 $\mu$g./kg. for treated and control ewes respectively.

The decline in vitamin $B_{12}$ concentration of colostrum and milk of ewes with increasing time after lambing reported by other workers was confirmed.

There was a significant and sustained increase of about 10% in the protein concentration of colostrum and milk of the treated ewes. The protein concentration of colostrum and milk declined after lambing at a rate about parallel to the decline in vitamin concentration, reaching a relatively stable level after 4 days.

Analysis of liver from lambs born dead or that died before sucking indicated that lambs from treated ewes had higher liver reserves of the vitamin at birth. Treatment of ewes resulted in better growth and overall condition of lambs.

Seekles, L., Hesse, N. C. W. & van Dijk, J. B. (1961). Voorkoming van ongewenste bijverschijnselen bij de preventieve behandeling van melkziekte met behulp van parenterale toediening van vitamine $D_3$ in gesolubiliseerde vorm. **[The prevention of undesirable side-effects in the preventive treatment of milk fever by means of parenteral administration of solubilized vitamin $D_3$.]**—Tijdschr. Diergeneesk. **86,** 344-345. [In Dutch. Summaries in English, French and German.] **2288**

Intravenous inj. of 10 million i.u. of the vitamin caused a syndrome resembling shock in 2 of 60 cows. The authors recommended

that the same dose of "solubilized" vitamin should be given intramuscularly; they treated 80 cows this way and none developed shock. The influence of treatment on milk fever incidence will be described later.—R.M.

Hatziolos, B. C. & Shaw, J. C. (1958). **Bovine ketosis: a microscopic study of the pituitary and adrenal glands.**—Bull. Md. agric. Exp. Sta. No. A-98 pp. 68. **2289**

The main results of these authors' work have already been reported [*V.B.* **22,** 3149 & **23,** 2652]. This Bulletin provides details and photomicrographs of changes in pituitary and adrenal glands of 18 cows with ketosis.—R.M.

***See also abst.* 2403** (book, advances in veterinary science, vol. 6).

## DISEASES, GENERAL

Anderson, J. L. (1960). **Animal health picture of the Territory of Papua and New Guinea.** —Papua agric. J. **13,** 52-58. **2290**

The diseases and parasites of domestic animals in Papua and New Guinea were listed. During 1958–59 only 0·72% of cattle gave positive reactions for brucellosis and 0·062% for TB. Both diseases will soon be eradicated. A disease that appears to be unique to the Territory is an atypical form of anthrax in pigs. It is endemic in parts of the Highlands, and at intervals causes epidemics with high mortality. The disease has not been recorded in man, even when affected animals have been used for food. Transmission tests with cattle, sheep and horses were unsuccessful, but g.pigs were susceptible. Many of the serious virus diseases, such as F. & M. disease, rinderpest, swine fever, Newcastle disease, rabies and contagious bovine pleuropneumonia have never been recorded. *Boophilus microplus* is the subject of an eradication campaign. Screw-worms are controlled by preventive sprays and ointments. The kidney worm, *Stephanurus dentatus,* is widespread in pigs. As the hot, humid climate and coarse natural pastures of the lowlands do not suit British breeds of cattle, zebu cattle have been introduced for cross-breeding with British breeds. —M.G.G.

Pinkiewicz, E. (1961). Die Gerinnungsfaktorenwerte der I. Phase bei kranken Hunden. **[The thromboplastin time in diseased dogs.]** —Wien. tierärztl. Mschr. **48,** 78-90. [Summaries in English, French and Italian.] **2291**

Plasma factors of the first coagulation phase were studied in 123 dogs with various diseases, such as ascites, skin diseases, digestive, respiratory, circulatory, nervous, urinary and metabolic disorders, leucosis, tumours, icterus, distemper, leptospirosis, TB., tularaemia, thallium poisoning and dicoumarol poisoning. Thromboplastin was reduced in 25, prothrombin (Factor II) values in 18, proaccelerin (Factor V) values in 19, and proconvertin (Factor VII) values in 31 dogs. Factor VII appeared to be the most sensitive with regard to liver conditions.—E.G.

Valentinčič, S. I. (1960). Nostre osservazioni sulle malattie dei caprioli. **[Diseases of roe-deer.]** — Nuova Vet. **36,** 188-190. [Summaries in English, French, German and Spanish.] **2292**

The commonest causes of death in 169 roe-deer examined P.M. at the Ljubljana Veterinary Faculty, Yugoslavia, during 1955–1960 were helminth infestation (50%) and gastro-enteritis 14%.—T.E.G.R.

Bassini, E. (1960). Osservazioni sulle malattie più comuni della selvaggina allevata in cattività. **[Common diseases of game birds bred in captivity.]**—Nuova Vet. **36,** 197-200. [Summaries in English, French, German and Spanish.] **2293**

The common diseases of wild birds in captivity are coccidiosis and intestinal parasitism. The former is complicated by drug resistance of the protozoa and by severe vitamin deficiency caused by prolonged treatment.—T.E.G.R.

Tolstova-Pariĭskaya, N. G., Shcheglov, A. M. & Krasnikov, G. A. (1961). **[Pathology and pathogenesis of porcine atrophic rhinitis.]**— Veterinariya, Moscow No. 1 pp. 33-38. **2294**

The authors examined post-mortem 3 still-born, 4 weakling and 6 apparently healthy day-old pigs from two farms affected with atrophic rhinitis; also 9 affected pigs killed between 5 and 15 months of age. Special attention was paid to the central nervous system. They agreed with Brion & Fontaine [*V.B.* **28,** 3703] that pigs on affected farms were born with lesions of the nervous and circulatory systems, which could lower resistance to infection and favour the development of rhinitis.—R.M.

Franze, F. (1961). Beobachtungen über herztodähnliche Erkrankungen bei Jungen-

ten. **[Round heart disease in ducklings.]**—Mh. VetMed. **16,** 109-110. **2295**

On two farms with a total population of about 1,000 ducklings six weeks old, 44 died suddenly without symptoms of any illness. Six of them were examined P.M. and the lesions seen resembled those of round heart disease in fowls. On one farm the diet of potatoes, wheat bran and bread was supplemented by daily doses of 3 g. of cod-liver oil per bird, and lucerne pasture; on the other the fish meal in the diet of barley, bran and fish meal, was replaced by vitamin E. No further cases occurred on either farm.—E.G.

Willham, R. L. & Cox, D. F. (1961). **Sperm production in swine after exposure to X-irradiation.** — Radiation Res. **14,** 223-229. [Authors' summary modified.] **2296**

The total number of spermatozoa in each ejaculate was followed for one year in 24 boars exposed at 6 months of age to 0, 300, 600, and 900 r of X-rays directed to the testicles. The general response conformed to that outlined for other mammals. About 60 days has been estimated as the interval from primary spermatocyte to sperm in the ejaculate. Data indicated that recovery is a function of the number of surviving spermatogonia. The length of time required for recovery to fertility appears to be longer in swine than in mice.

Hager, E. B., Mannick, J. A., Thomas, E. D. & Ferrebee, J. W. (1961). **Dogs that survive "lethal" exposures to radiation.**—Radiation Res. **14,** 192-205. [Authors' summary modified.] **2297**

In a 2 year study of the treatment of lethal total-body radiation exposure in the dog 37 survivors have been accumulated. The exposures survived have been 600 to 1800 r of $\gamma$- or X-ray administered continuously at dose rates of 2 to 18 r/min. The apparently successful treatments used have been transfusions in three instances, implantation of allogenic (homologous) marrow in four instances, and infusion of a stored sample of autologous marrow in thirty instances.

Surviving animals 6 to 20 months after exposure appear in normal health. Their coats are grey; otherwise their appearance and behaviour are normal. Three have been given opportunity to breed and have produced normal offspring.

Lindop, P. J. & Rotblat, J. (1961). **Shortening of life and causes of death in mice exposed to a single whole-body dose of radiation.**—Nature, Lond. **189,** 645-648. **2298**

4,604 mice aged 30 days were subdivided into 10 groups; one group acted as controls and the remainder were exposed to various single whole-body doses of X-rays.

From observations then made on the animals, the main conclusion was that while the reduction in life-span was proportional to the dose, this was due, not to the induction of specific diseases but to the bringing forward in time of all causes of death, without any intrinsic change in their relative probabilities. From this point of view radiation may be considered an aging factor, but not identical with natural aging, since the relative ages of onset of diseases were not the same in the irradiated as in the control animals.—E.V.L.

Monsen, H. (1960). **Heart lesions in mice induced by feeding irradiated foods.**—Fed. Proc. **19,** 1031-1034. **2299**

Of 377 weanling mice of Cb strain, fed a diet of irradiated pork, chicken, evaporated milk, carrots and potatoes, 66 died of rupture or dilatation of the left auricle. Of 400 mice of Strong A strain on a similar diet, only eight died of heart conditions. None of 758 littermate controls developed heart lesions. Mortality in Cb strain mice, fed exclusively on irradiated evaporated milk, was 60–80%. —E.G.

McCay, C. M. & Rumsey, G. L. (1960). **Effect of irradiated meat upon growth and reproduction of dogs.** — Fed. Proc. **19,** 1027-1030. **2300**

Diets, 35% of the dry matter of which consisted of either beef, pork, chicken or tuna fish, irradiated with 2·79 and 5·58 million rads of beta rays, were fed to puppies. The remainder of the ration consisted of a commercial dog food. Controls were given a diet of similar composition but containing non-irradiated meat. There was no significant difference in growth and haematological findings between experimental and control groups, nor was there any convincing evidence that the reproductive performances of bitches on the pork, chicken or fish diet was in any way impaired. There was, however, a distinct reduction in the conception rate of bitches fed irradiated beef. P.M. and histopathological examinations were inconclusive.—E.G.

I. Cragle, R. G., Chandler, P. T. & Kamal, T. H. (1961). **Metabolism of calcium, stron-**

**tium and barium in lactating dairy cows.** — Fed. Proc. **20**, No. 1. Pt. 1 p. 291. **2301**

II. Kamal, T. H. & Cragle, R. G. (1961). **Ca-45 and P-32 metabolism in dairy cows with reference to plasma and milk ultrafiltrates.** — Ibid. p. 292. [Authors' absts. modified.] **2302**

I. Four Jersey cows were each given Ca-45, Sr-89 and Ba-133 in a single oral dose. They were fed a diet of 18% protein concentrate and hay. Samples of blood, milk and urine were taken at intervals of from half an hour up to 24 hours during an 8-day sampling period. The rate of appearance of Ca-45 and Ba-133 in blood was faster than that of Sr-89 with the maximum concentration occurring at 18·5, 18·5 and 26·5 hours, respectively. Although all three radioisotopes could be detected in blood as early as half an hour after dosing, Sr-89 and Ba-133 did not appear in urine until 18 hours after dosing, while Ca-45 did not appear until 26 hours. Ca-45 was preferentially transferred from diet to milk by a factor of 6·3 over Sr-89 and of 20·4 over Ba-133. Averages of 5·3, 0·85 and 0·25% of the Ca-45, Sr-89 and Ba-133, respectively, were secreted into milk (6·63 kg./day) during the period, while 0·21, 2·10 and 1·74%, respectively, were excreted into urine.

II. Ca-45 and P-32 were injected intravenously into two lactating Jersey cows. After one hour the concentration of plasma and milk ultrafiltrable (UF) Ca-45 was about one-third of total Ca-45 in plasma and milk and the conc. in milk of UF P-32 was about 40% of total P-32 in milk. The specific activity of P-32 in plasma ultra-filtrate was equal to that of total plasma P-32 during the first 3 hours and thereafter it was 60% of the total. While Ca-45 was detected appreciably in faeces within 1 hour, P-32 did not appear until 5 hours after injection. During the first 3–4 hours Ca-45/P-32 ratio increased in milk, plasma, and urine and thereafter decreased as well as in faeces. Part of the injected Ca is transformed directly after injection to non-ultrafiltrable form possibly as a result of its binding with plasma protein, while P is utilized first by tissues as soluble inorganic P and then fed back to the blood in various forms. There was a greater delay in endogenous excretion of phosphorus than calcium in faeces. This study suggests that UF Ca and P in plasma are the main precursors of Ca and P in milk.

Cragle, R. G. (1961). **Uptake and excretion of cesium$^{134}$ and potassium$^{42}$ in lactating dairy cows.**—J. Dairy Sci. **44**, 352-357. [Author's summary modified.] **2303**

Eight lactating cows were each given 1 millicurie of $Cs^{134}$ and 6 mc. of $K^{42}$ in a single oral dose. An average of 6·7% of the Cs and 4·2% of the K were secreted into milk in 66 hours. Corresponding values for urinary excretion were 19 and 38%. Averages of 10·5, 30·0, and 32·7% of the caesium were found in milk, urine, and faeces, respectively, in 210 hours. The variation in $Cs^{134}$ and $K^{42}$ secreted into milk can largely be explained on the basis of differing milk yields, with concentration remaining somewhat constant. The concentration of these isotopes in urine and the volume of urine are both highly variable.

Vieux & Maurin. (1960). Au sujet de la tachycardie-polypnée du veau "chevalin". **[Tachycardia and polypnoea in new-born calves with muscular hypertrophy.]** — Bull. Soc. vet. prat. **44**, 279-284. **2304**

The disease affects calves with muscular hypertrophy (but otherwise apparently normal) within 24 hours after birth, and death occurs after 3–4 days; in benign cases the onset is delayed up to 8 days. The respiration and heart rates are 80–100/min. and 150–200/min. and increase to 150 and 250–300 respectively. The aetiology is obscure. Terramycin, 500 mg. i/p or, preferably, i/v effected a cure in 12 of 14 animals treated. An account is given of 8 of these cases.

—T.E.G.R.

Holtenius, P. (1961). **Cytological puncture. A new method for the study of bovine hepatic disease.**—Cornell Vet. **51**, 56-63. [Author's summary.] **2305**

A fine needle with an outer diameter of 0·6 mm. is inserted through the abdominal wall into the liver and a sample of liver tissue aspirated. Smears of the aspirated material, when fixed and stained, permit the evaluation of a number of morphological features in liver cells.

Winter, H. (1961). **Lipofuscin pigmentation of sheep livers in Australia.**—Nature, Lond. **189**, 674-676. **2306**

Sheep grazing in certain districts of Australia develop a pigmentation of liver, portal lymph nodes and lungs without showing any adverse clinical signs : about 25,000 livers (3%) are condemned annually in the Brisbane abattoir because of this discoloration. The

pigmentation is found in all sheep grazing in certain areas of mulga *(Acacia aneura)*, the leaves of which are fed to sheep in times of drought. The pigmentation is usually referred to as melanosis, but the author's techniques show the pigment to be lipofuscin at various stages of oxidation.—E.V.L.

Siller, W. G. & Ostler, D. C. (1961). **The histopathology of an entero-hepatic syndrome of turkey poults.** — Vet. Rec. **73,** 134-138. [Authors' summary modified.] **2307**

Three outbreaks of a disease of turkey poults with very high mortality are described. The characteristic and very striking histological changes in duodenum, liver and kidney are described in detail. The livers are diffusely affected with very severe necrobiotic changes accompanied by marked regeneration. The kidneys show the typical lesions of membranous glomerulonephritis and hyaline droplet nephrosis, while marked catarrhal enteritis is characteristic in the duodenum.

These histological lesions lend support to the possibility that an as yet unidentified toxic agent may be involved.

Jelínková, V. (1960). Histogenetické studie ložiskových subserosních atypických reakcí lymfatické tkáně u vepřů. **[Focal subserous hyperplasia of lymphatic tissue in pigs.]** — Sborn. vys. Šk. zeměděls. Brno Ser. B **8,** 505-516. [In Czech. Summaries in German and Russian.] **2308**

Liver and lungs of 1,699 slaughtered pigs were examined of which 168 had multiple, subpleural, focal, nodular, lymphoid hyperplasia, 112 had similar lesions located subserously in the liver and 103 had both pulmonary and hepatic lesions. In 53 pigs eosinophile granulocytes were demonstrable in lymphatic tissue and surrounding parenchyma. In 29 atypical subserous lesions were associated with unspecified parasites and in 30 there was bronchial epithelial hyperplasia. Subserous haemorrhages were present in 29. Four developmental morphological phases were observed. Phase one (seen rarely) was characterized by aggregates of lymphoid cells, phase two by the progressive growth of these foci. In phase three the nodular character became more pronounced and structurally there was resemblance with lymph nodes. Phase four was characterized by further proliferation of nodular and inter-nodular tissues. The aetiology of the condition is not clear. [See also *V.B.* **26,** 1803, 3479; **28,** 880 & **31,** 214.]—E.G.

Corsico, G. (1960). Nefrite interstiziale eosinofilica nel suino. **[Eosinophilic interstitial nephritis in pigs.]** — Clin. vet., Milano **83,** 353-366. **2309**

Examination of pigs' organs condemned at meat inspection revealed eosinophilic interstitial nephritis associated with focal or diffuse eosinophilic interstitial hepatitis and sometimes with lung lesions (eosinophilic infiltration with green spots). It is suggested that the lesions, which are described and illustrated, may have been caused by migrating helminth larvae.—T.E.G.R.

Stromberg, M. W., Kitchell, R. L. & Callstrom, R. C. (1961). **Post-tetanic potentiation in spinal cord of normal and myoclonic pigs.**— Amer. J. vet. Res. **22,** 72-79. [Authors' summary modified.] **2310**

The effect of dorsal root tetanization on the first sacral segmental reflex was tested in 31 pigs. The responses were analysed with regard to duration of monosynaptic and of second wave potentiation to the 70% relaxation level and comparative maximum amplitudes of first and second waves after dorsal root tetanization. In these respects marked differences were demonstrated between control pigs and pigs with tremor of myoclonia congenita. Less marked differences were observed between control pigs and recovered pigs.

The nature of the spinal cord reflex response in pigs with tremor suggests increased excitability by way of two-neurone-arc pathways and decreased excitability by way of multi-neuronal pathways.

Überreiter, O. (1961). Eine besondere Keratitisform (Keratitis superficialis chronica) beim Hunde. **[Superficial chronic keratitis in dogs.]** — Wien. tierärztl. Mschr. **48,** 65-78. [Summaries in English, French and Italian.] **2311**

Aetiologically unclarified chronic keratitis, characterized by diffuse or focal leucocytic infiltration and vascular proliferation under Bowman's membrane, was studied in 84 dogs, 55 of which were Alsatians. The corneal epithelium was, as a rule, unchanged. In 71 of the dogs both eyes were affected, in 13 only one eye. Treatment was by excision of affected parts of the cornea and cauterization. Transmission to other dogs by corneal grafting was unsuccessful. There was no reaction in dogs injected intracutaneously with corneal tissue suspensions from affected dogs.—E.G.

Köhler, H. (1960). Über das gehäufte Vorkommen von multiplen Abszessen und Nekrosen in Bindegewebe und Muskulatur des Schweines. **[Increased incidence of multiple abscesses and necrosis in connective tissue and muscle in pigs.]** — Mh. VetMed. **15**, 635-640. **2312**

A description of multiple abscesses and necrotic foci in subcutaneous, subfascial and intermuscular connective tissue and in skeletal muscle of pigs, particularly in the stifle and hock region and in the hams. The fore legs were rarely affected. Aetiology of this condition, the incidence of which is stated to be increasing, is obscure.—E.G.

Lettow, E. & Dämmrich, K. (1960). Beitrag zur Klinik und Pathologie der Osteogenesis imperfecta bei Junghunden. **[Symptoms and pathology of imperfect osteogenesis in Bedlington Terrier puppies.]**—Zbl. VetMed. **7**, 936-966. [Summaries in English, French and Spanish.] **2313**

A detailed clinical and pathological study of imperfect osteogenesis in 4 puppies from the same litter. It is considered to be a familial disease, arising through a deficiency of osteoblasts.—M.G.G.

Teunissen, G. H. B. (1961). Das eosinophile Granulom bei der Katze (Lippengranulom). **[Eosinophilic granuloma or lip ulcer in cats.]** —Kleintier-Praxis **6**, 2-4. **2314**

Over ten years, lip ulcer was diagnosed in 40 cats aged 7 months to 12 years, the majority being from 1·5–3 years old. Transmission to rabbits, using granuloma tissue filtrate, failed. The leuocyte count was low and there was marked eosinophilia. Treatment with iodine preparations, ichthyol ointment, glycerol, crystal violet, vitamin B complex, vitamin C, vitamin E and chlortetracycline was unsuccessful. Improvement was obtained by X-ray irradiation, but in about 25% of cats the condition recurred 2–6 months later. There were also instances of spontaneous recovery.—E.G.

## POISONS AND POISONING

Musche, R. (1961). Beitrag zu dem Problem der Gefährdung der weidenden Nutztiere durch gewerblich gebrauchte Chemiekalien. **[Contamination of pastures by industrial waste.]**—Dtsch. tierärztl. Wschr. **68**, 49-51. [Summary in English.] **2315**

Hazards to livestock from pastures contaminated by industrial waste containing fluorine, lead, molybdenum or prussic acid and poisoning with agricultural pesticides containing arsenic, mercury, copper, organic phosphorus compounds, etc., were discussed. Details were given of the fluorine content in teeth, fresh bone and bone ash from cattle which had developed swollen joints, stiff-legged gait, emaciation and a dull coat, after grazing on a pasture adjoining a chemical factory.—E.G.

Oliver, W. T. & Funnell, H. S. (1961). **Correlation of the effects of parathion on erythrocyte cholinesterase with symptomatology in pigs.** — Amer. J. vet. Res. **22**, 80-84. [Authors' summary modified.] **2316**

The production of clinical signs by parathion in pigs was dependent upon the rate and degree of depression of erythrocyte cholinesterase activity rather than primarily upon the degree of inhibition. Chronic parathion poisoning caused complete inhibition of erythrocyte cholinesterase without necessarily concurrent skeletal muscle paralysis; of the four pigs used, only one was mildly affected, although erythrocyte cholinesterase activity had been completely inhibited in at least three of them. Conversely, acute poisoning caused a rapid depression of erythrocyte cholinesterase and produced acute paralytic signs in all members of the group without complete inhibition of erythrocyte cholinesterase. Neither the acute nor chronic effects of the compound on plasma cholinesterase could be linked with the clinical signs.

Guarda, F. (1960). Beitrag zur experimentellen Vergiftung mit E 605 forte bei Hühnern. (Toxikologie, Klinik, pathologische Anatomie und Histologie). **[Experimental parathion poisoning in fowls.]**—Wien. tierärztl. Mschr. **47**, 842-860. [Summaries in English, French and Italian.] **2317**

The lethal parenteral dose of parathion for adult fowls was about 2·26 mg., the lethal oral dose about 3·13 mg./kg. body weight. For young birds it was somewhat lower. Heavy infestation in birds reduced resistance to the toxic effect. Clinical symptoms, pathology and P.M. findings in acute and chronic parathion poisoning were discussed.

—E.G.

Levinskas, G. T., Vidone, L. B., O'Grady, J. J. & Shaffer, C. B. (1961). **Acute and chronic toxicity of dodine (n-dodecylguanidine acetate).** — Toxicol. appl. Pharm. **3,** 127-142. **2318**

Dodine is an agricultural fungicide used on fruit trees. It is a cationic surface-active compound and possesses the toxicological properties characteristic of these compounds. Single and repeated doses were given to rats and dogs. It was also applied to the skin and eyes of rabbits. Under specified conditions of use there was very little toxic hazard.—R.M.

Poul, J. & Rioche, M. (1960). Toxicité du métaldéhyde pour le chien. Recherche de la DL 50. **[Toxicity of metaldehyde for dogs.]** —Arch. Inst. Pasteur Algér. **38,** 252-257. **2319**

Dogs ingesting metaldehyde developed within 2 hours convulsions, hallucinations, violent dyspnoea, and frothing at the mouth. The $LD_{50}$ was 0·21 g./kg.—M.G.G.

Budinger, J. M. (1961). **Diphenylthiocarbazone blindness in dogs.**—Arch. Path. **71,** 304-310. [Author's summary modified.] **2320**

This drug is a metal-chelating agent. Intravenous injection in dogs may produce tapetal zinc loss and necrosis at varying doses, with secondary retinal detachment and permanent blindness.

Notable species differences exist in ocular zinc concentrations, related mainly to the nature of the tapetum. The rabbit, with low choroidal zinc levels, shows great sensitivity to diphenylthiocarbazone ocular injury characterized by retinal degeneration rather than tapetal destruction.

Aanes, W. A. (1961). **Pingue (Hymenoxys richardsonii) poisoning in sheep.**—Amer. J. vet. Res. **22,** 47-52. [Author's summary modified.] **2321**

This plant is also known as Colorado rubberweed and *Actinea richardsoni.* It was fed to 24 sheep and 6 sheep fed lucerne were controls. Acute poisoning was produced, causing death in 1–5 days. The clinical signs and the lesions indicated severe disturbances in the digestive and respiratory systems. The minimum lethal dose of pingue was 1·5% of the sheep's body weight.

Fangauf, R. & Vogt, H. (1961). Mitteilung über einen Verträglichkeitsversuch mit Stechapfelsamen (Daturasamen) bei legenden Hennen und bei Küken. **[Toxicity trials in laying hens and chicks with Datura stramonium seeds, a common contaminant of soya bean consignments.]** — Arch. Geflügelk. **25,** 167-171. [Summary in English.] **2322**

Daily doses of 10–2,000 seeds (up to 15 g.) of *Datura stramonium* had no adverse effect on health and egg production in ten adult hens. Similarly ten chicks, 3 weeks old, tolerated daily doses of 5–100 seeds, although the highest dose appeared to retard weight gain slightly.—E.G.

Bojinović, M., Durdević, R. & Trifunović, Ž. (1961). Masovna pojava detelinske bolesti kod mladih ćuraka na ispaši. **[Photosensitization in turkey poults due to clover.]**—Vet. Glasn. **15,** 135-138. [In Croat. Summary in German.] **2323**

Of 890 poults that had access to red clover (*Trifolium pratense*), 242 developed (when exposed to sunlight) oedematous swelling of head and neck, and 42 died. Bacteriological examination was negative. The survivors recovered when removed from the pasture and housed in the dark.—E.G.

Roy, D. N., Lipton, S. H., Bird, H. R. & Strong, F. M. (1961). **Relation of semicarbazide, nitrofurazone and related compounds to β-aminopropionitrile toxicity in turkey poults.**—Poult. Sci. **40,** 55-60. **2324**

Nitrofurazone or furazolidone as 0·06% of the diet caused high mortality in turkey poults when given for 4–5 weeks, but did not cause internal haemorrhage or leg deformities. Below 0·03% they were not toxic. Nitrofurazone potentiated the toxicity of β-aminopropionitrile: turkey poults fed non-toxic doses of both drugs developed symptoms of lathyrism. 4, 5-dioxovaleronitrile-5-semicarbazone as 0·03% of the diet was slightly toxic, but did not cause aortic rupture. Semicarbazide hydrochloride, as 0·03% or 0·045% of the diet caused all the symptoms of lathyrism characteristic of β-aminopropionitrile intoxication, including depression of growth, aortic rupture and leg deformity, but the incidence of internal haemorrhage was lower. Pyridoxine hydrochloride as 0·2% of the diet did not markedly reduce the toxicity of semicarbazide hydrochloride, and 1-isonicotinyl-2-isopropylhydrazine did not potentiate the lathyrogenic effect of semicarbazide as it did that of β-aminopropionitrile.—M.G.G.

Koudela, J. (1961). Hromadná otrava mladého hovädzieho dobytka insekticídnym prípravkom gamadyn. **[Benzene hexachloride**

**poisoning in young cattle.**]—Veterinářství **11,** 107-108. [In Slovak.] **2325**

An unknown quantity of a 10% BHC powder, accidentally mixed with the food, killed 34 of 59 calves and young cattle. It was thought that the calves must have ingested about 10–50 g./100 kg. body wt. of the powder.—E.G.

*See also abst.* **2394** (report, New Zealand).

## PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

I. Ionov, P. S. & Timoshkin, Z. F. (1961). **[Action of plant bitters from Artemisia and gentian on motor function of the forestomachs of cattle.**]—Veterinariya, Moscow No. 2 pp. 54-55. [In Russian.] **2326**

II. Petrova, E. V. & Goryainova, Z. S. (1961). **[Action of Veratrum album infusion on motor function of the forestomachs of cattle.**] —Ibid. pp. 55-56. [In Russian.] **2327**

I. Experiments showed that the minimum doses needed to stimulate rumen contractions in cattle weighing 300–400 kg. were 50 g. of powdered Artemisia (probably *A. taurica*) and 25 g. of gentian root. Artemisia was more effective than gentian in stimulating the glands of the digestive tract. In protracted cases of ruminal atony the drugs should be given once daily for a few days.

II. The dose of white veratrum infusion for cattle with primary atony of the forestomachs was 8–10 ml. [strength not stated]. Severe atony, as in copper sulphate poisoning, did not respond to the drug. There is another paper on this topic by Ionov & Timoshkin on pages 64–65 of *Veterinariya* No. 3 (1961).

—R.M.

Groth, W. (1960). Untersuchungen über die Wirkung einiger Antibiotica und eines Antidiabeticums auf die Nebennieren und die Langerhansschen Inseln des Pankreas beim Huhn. **[Action of some antibiotics and an antidiabetic drug on the adrenals and islets of Langerhans in the fowl.**]—Zbl. VetMed. **7,** 702-714. [Summaries in English, French and Spanish.] **2328**

G. studied the effect on the islets of Langerhans and adrenals of 72 chicks of both sexes, of oral therapeutic doses of chlortetracycline, given over either short or long periods, and of four daily i/m doses each of 10 mg./kg. body wt. of methyltetracycline. In the pancreas the antibiotics appeared to stimulate both hypo- and hyperglycaemic components. The effect on adrenals was inconclusive, although there appeared to be stimulation by the antibiotics, the blood sugar level remaining constant. Prolonged low-level feeding with penicillin or aureomycin had no significant effect on islet tissue. A group of male chicks was given tolbutamide, an antidiabetic drug, which stimulated adrenaline-producing cells in the medulla. Blood sugar levels in this group were high.—E.G.

Kovács, F. & Tölgyesi, G. (1961). Die Wirkung von intramuskulär eingespritztem Tetrachlorkohlenstoff auf den Blutkalzium- und Blutzuckerspiegel. **[Effect of intramuscular carbon tetrachloride on blood calcium and sugar in cattle.**]—Acta vet. Acad. Sci. hung. **11,** 107-114. [In German.] **2329**

The calcium and sugar content of the blood was determined before, and for 5 days after, i/m injection of carbon tetrachloride in liquid paraffin, in 10 healthy cows and in 10 old, poorly nourished cattle. The Ca content in the first group was 10·8 mg.% before and 10·3–10·6 mg.% after treatment, and in the second group 10·7 mg.% and 9·7–10·5 mg.%. The sugar content before treatment was 54 mg.% in the first group and 56 mg.% in the second, and after treatment 50–56 mg.% in both groups. It was considered, however, that cattle in poor condition should be given food rich in carbohydrates for at least a week before and after treatment.—M.G.G.

Buruiana, L. M. (1961). Effet de l'extrait tissulaire d'humeur vitrée sur l'action hépatotoxique du tétrachlorure de carbone. **[Protective action of bovine vitreous humour against liver damage from carbon tetrachloride.**]—Rec. Méd. vét. **137,** 11-18. [Summaries in English and Spanish.] **2330**

Parenteral injection of 1 ml./kg. body wt. of bovine vitreous body extract appeared to protect g.pigs against the hepatotoxic effect of i/p doses of carbon tetrachloride. The value of these findings was discussed in relation to the possible alleviation of harmful side effects of the anthelmintic.—E.G.

Delak, M. & Ilijaš, B. (1961). Upliv hijaluronidaze na rezorpciju tetraklormetana (carbonei tetrachloridum) iz potkožja i

mišićja. **[Influence of hyaluronidase on absorption of carbon tetrachloride from subcutaneous tissue and muscle.]** — Vet. Arhiv **31**, 44-52. [In Croat. Summaries in English and French.] **2331**

Absorption of pure $CCl_4$, and $CCl_4$ suspended in liquid paraffin, from subcutaneous tissue and muscle of 24 rabbits and six sheep was studied by X-ray examination 0, 3, 24, 72, 96, and 144 hours after injection. The pure drug was absorbed much more rapidly than the suspension. Absorption of the pure drug but not of the suspension in paraffin was enhanced by simultaneous injection of 300–400 i.u. of a hyaluronidase preparation.—E.G.

Kingsbury, P. A. (1961). **Phenothiazine synergists.**—Vet. Rec. **73**, 183-184. **2332**

Coumaphos (0, 0-diethyl 0-3-chloro-4-methyl-umbelliferyl-phosphorothioate) and its phosphoroate analogue, Coroxon, acted synergically with phenothiazine against parasitic nematodes of sheep. Worm counts at P.M. examination in 83 treated lambs and in untreated controls revealed that the efficacy of 200 mg./kg. of phenothiazine plus either 1·5 mg./kg. of Coroxon or 2 mg./kg. of Coumaphos was 99–100% against *Haemonchus*, 50% (range of 0–99%) against *Ostertagia*, 74% (0–99%) against *Trichostrongylus axei*, 81% against *T. vitrinus* and *T. colubriformis*, 88% against *Nematodirus* and *Cooperia* and 82% against *Strongyloides*. —M.G.G.

Lucas, A. & Laroche, M. (1961). Sur la toxicité du sulfate de dihydrostreptomycine chez les oiseaux. **[Toxicity of dihydrostreptomycin sulphate for fowls, pheasants and pigeons.]** —Rec. Méd. vét. **137**, 187-190. [Summaries in English and Spanish.] **2333**

Injection of a toxic dose of dihydrostreptomycin sulphate in fowls, pigeons and pheasants caused first dyspnoea, followed by weakness, incoordination and somnolence. Males were more sensitive than females. Vomiting occurred in pigeons. It was concluded that the maximum therapeutic i/m dose is 250 mg./kg. for fowls, and 150 mg./kg. for pigeons and pheasants.—M.G.G.

*See also absts.* **2060** (antibiotics in glanders); **2077** (nitrofurazone in S. cholerae-suis infection); **2117** (treatment of endometritis in cows with chlorhexidine, antibiotics or Lugol's soln., in combination with stilboestrol); **2120-2121** (antibiotics); **2124** (a herbicide for treatment of ringworm in calves); **2137-2138** (aminoacriquine therapy of bovine trichomoniasis); **2141-2144** (coccidiosis); **2146** (B. berbera infection); **2172** (interferon); **2194** (corticosteroids in canine virus diseases); **2215** (prospects for a viral antibiotic); **2233-2235, 2242-2246 & 2248** (anthelmintics); **2366** (penicillin in milk of treated cows); **2368-2369** (chlortetracycline in frozen poultry carcasses); **2404** (book, therapeutic drugs).

## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Findlay, J. D. & Ingram, D. L. (1961). **Brain temperature as a factor in the control of thermal polypnoea in the ox (Bos taurus).**— J. Physiol. **155**, 72-85. [Authors' summary modified.] **2334**

The temperature of the brain and of the blood in the carotid artery was measured in Ayrshire calves.

In environments at 7·5 and 18°C. (dry-bulb temperatures) heating with infra-red irradiation was accompanied by a rise in the respiratory rate but body temp. at first fell slightly before beginning to rise. In an environment at 35°C. there was no fall in body temp. on exposure to infra-red irradiation, but respiratory rate increased.

When irradiation ceased, respiratory rate declined to almost the control value provided the body temp. was below 40°C. At body temp. above 40° removal of the irradiation had no immediate effect on the respiratory rate. A rise in body temp. of 0·5° after feeding resulted in only a very slight increase in the respiratory rate.

Local heating of the hypothalamus caused an increase in respiratory rate and a decrease in tidal volume when the body temp. was below 40°. There is some evidence that at higher body temp. heating of the hypothalamus caused a decrease in respiratory rate and an increase in tidal volume.

It is suggested that when the body temperature is within the normal range thermal polypnoea is controlled by stimulation at the periphery. At body temperatures above 40°C. stimulation of central receptors appears to become of major importance.

Arvy, L. (1961). I. Contribution à l'histoenzymologie du rhinarium d'Ovis aries. II. Contribution à l'histoenzymologie de la surrénale de Sus scrofa. **[Enzymes of the sheep's muzzle and the adrenal gland of pig.]** — C. R. Acad. Sci., Paris **252**, 177-178 & 467-469. **2335**

Muzzle glands elaborated a basophile secretion rich in dehydrogenase and leucyl-

betanaphthylamidase activity and other enzymes.

The author detected monoaminooxydase, dehydrogenase, leucyl-betanaphthylamidase, phosphatase and carboxyl esterases in histological secretions of pig adrenal gland.—R.M.

Dahlqvist, A. (1961). **Intestinal carbohydrases of a new-born pig.**—Nature, Lond. **190,** 31-32. **2336**

To define those enzymes present at birth, the carbohydrase activities of a homogenate of the small intestine of a new-born pig were measured and were compared with data for an adult pig.—R.M.

Peoples, S. A. (1961). **The metabolic fate of arsenic acid in dairy cows.**—Fed. Proc. **20,** No. 1. Pt. 1 p. 174. [Author's abst. modified.] **2337**

Twelve lactating cows were divided into groups of three and fed arsenic oxide at doses of 0, 0·05, 0·25 and 1·25 mg./kg. The feeding period was 8 weeks followed by a 15 day arsenic-free period. Samples were analysed as follows: milk at weekly intervals; body tissues, blood, urine, and faeces on 2 animals from each group at 8 weeks; tissues, blood, urine and faeces of the remaining animals when killed at the end of the experiment. At no dose level did arsenic appear in the milk, and there was less than 0·2 p.p.m. in blood, bone, brain, heart, fat, and skeletal muscle. The main storage of arsenic was in the spleen and liver, being 1·2 and 2·0 p.p.m. respectively at the highest level. The concentration in faeces was low but the urine concentration was high and was in proportion to the dose. After 4 days of the arsenic-free period there was no arsenic in urine or faeces and after 15 days only the spleen and liver at the highest dose had detectable amounts. It was concluded that arsenic oxide is rapidly excreted in the urine with little tendency to accumulate in the tissues and no excretion in the milk.

Baker, G. & Jones, L. H. P. (1961). **Opal in the animal body.**—Nature, Lond. **189,** 682-683. **2338**

The presence in the organism of sheep of opal phytoliths, which are insoluble residues of plant origin, consisting mainly of microscopic bodies of amorphous silica, was discussed. In addition there is a small proportion of introduced particles and fragments of mineral or other origin, termed "allothigenes". The amount of opal phytoliths in the rumen of sheep on a diet of oat hay was estimated at 9·5 g., the amount of other allothigenes at 0·5 g. Some plants, however, like *Lolium rigidum* may have twice the silica content of oat hay. A percentage of allothigenes is excreted with the faeces and urine, but a certain amount is also retained in the lymph nodes, although the mechanism of entry into the lymphatic system is so far unknown. Opal phytoliths were also present inside siliceous uroliths and it was assumed that they may act as nuclei, initiating the precipitation of silica. The term authigenes was proposed for zooliths produced by secretion within the body, as distinct from introduced allothigenes. —E.G.

Turlin, A. A. (1961). **[Changes in the blood composition of horses under various pasture conditions.]**—Vestn. sel'skokhoz. Nauki No. 2. pp. 66-68. [In Russian. English summary modified.] **2339**

The amount of haemoglobin in the blood of horses was higher in autumn than in summer, and the number of erythrocytes was lower. The content of albumin fractions in the blood plasma was lowered towards autumn and the amount of globulins increased.

In comparison with animals grazing on natural pastures, in horses kept on ley pastures the haemoglobin content increased, the reduction in the number of erythrocytes was smaller and the amount of albumins in the blood plasma fell. Because of the greater activity of the blood, growth in the young was more intense. There was an inverse ratio between the weight increases and the total amount of protein in the blood plasma.

Neumann, F. & Nobel, T. A. (1960). **[Qualitative determination of P.A.S. (periodic acid Schiff)-positive material in normal blood cells of domestic animals.]**—Refuah vet. **17,** 193-194. [In Hebrew. In English p. 221.] **2340**

P.A.S.-positive material was demonstrated in diffuse and granular form in the neutrophiles of cattle, horses, sheep, pigs, dogs, chickens and turkeys, in diffuse form in the eosinophiles of all these species, in diffuse and granular form in the thrombocytes of the mammals and occasionally of the birds, and occasionally in granular form in the lymphocytes of cattle, horses, pigs and dogs.—M.G.G.

Maděrová-Jarošová, V. (1960). Příspěvek ke stanovení celkového cholesterolu v krevním séru domácích zvířat metodou bez extrakce. **[Determination of total cholesterol in the serum of domestic animals by a method**

**without extraction.**] — Sborn. vys. Šk. zeměděls k. Brno Ser. B. **8**, 235-244. [In Czech. Summaries in German and Russian.] **2341**

Average serum cholesterol values, determined by a method described by Pearson *et al* in 1935 [Analyt. Chem. **25**, 818], expressed as mg.%, were: 125 in horses, 162 in cattle, 133 in pigs, 97 in sheep, 190 in dogs and 64 in rabbits. The numbers of animals examined were 77 horses, 126 cattle, 64 pigs, 60 sheep, 34 dogs and 32 rabbits.—E.G.

Mehlhorn, G. (1961). Beiträge zur Hämatologie der Zootiere. II. Mitteilung. Die Bestimmung der Phosphorsäure und ihrer Fraktionen im Blut vom Löwen (Panthera [Leo] Oken 1860). **[Haematology of zoo animals. II. Phosphoric acid and its fractions in the blood of lions.]** — Kleinter-Praxis **6**, 48-52. **2342**

Total, inorganic, acid-soluble and esterified phosphorus was determined in blood from 15 lions. The results were compared with values for dogs and cats.—R.M.

Kuida, H., Brown, A. M., Lange, R. L. & Hecht, H. H. (1961). **Cardiovascular studies on normal calves.** — Amer. J. Physiol. **200**, 247-252. [Abst. from authors' introduction.] **2343**

A syndrome (brisket disease) resembling congestive heart failure occurs in ruminants at high altitudes. Although it has been observed in all ages and in both sexes, in Utah the highest incidence is in calves under 1 year of age.

The present report deals with the cardiovascular haemodynamics of normal calves and of calves suffering from brisket disease.

Hamlin, R. L. & Scher, A. M. (1961). **Ventricular activation process and genesis of QRS complex in the goat.** — Amer. J. Physiol. **200**, 223-228. [Part of authors' introduction.] **2344**

The ventricular activation process in ruminants is quite different from that in other mammals. In most mammals the mean electrical activity during inscription of the QRS complex is directed toward the apex of the heart. In ruminants, activity directed toward the base of the heart predominates.

It was the purpose of this investigation to map the excitation of the goat ventricles by determining when the wave of depolarization arrives at many points in the heart. It was hoped that the body surface electrocardiogram might be explained by such a map.

Essler, W. O., Folk, G. E., Jr. & Adamson, G. E. (1961). **24-hour cardiac activity of unrestrained cats.** — Fed. Proc. **20**, No. 1. Pt. 1 p. 129. [Authors' abst. modified.] **2345**

Heart rates, ECG patterns and body temperatures from unrestrained animals were recorded outside the animal enclosure by means of short range, implantable, long-life telemetry transmitters. Prolonged recording of heart rates of ten isolated male adult cats showed minimum rates between 5 a.m. and 8 a.m. (118 beats/min.) with a 13% rise to a high level extending from 7 p.m. to 1 a.m. (133 beats/min.). The average of lowest beats in ten cats was 93 beats/min. In four cats the low rate (8 a.m.) was raised 6% by a startling noise but the high rate (8 p.m.) was raised 13%. The total 24-hour heart beat when recorded in the animal colony, increased by 2% when the animal was isolated.

Sellers, A. F., Stevens, C. E. & Dunlop, R. H. (1961). **Factors influencing gastric blood flow in normal cattle.**—Fed. Proc. **20**, No. 1. Pt. 1 p. 242. [Authors' abst. modified.] **2346**

Motor activities of the fore-stomachs appear highly dependent on the nature of ingesta for their reflex control. To study this problem electromagnetic flow-sensing leads were placed on right ruminal, omasal, and coeliac arteries. Sight and smell of food were accompanied by increase in flow. Further flow increase occurred during feeding; this high flow was maintained following cessation of feeding. Moderate increase (5–20 mm. Hg) in intraruminal pressure was not accompanied by much change in flow. Enclosure of the ingesta in a plastic bag was associated with lower flow rates than when the ingesta were exposed to the mucosa. Under certain conditions, blood flow in the arteries appeared independent of both gastric motility and heart rate.

Singleton, A. G. (1961). **The electromagnetic measurement of the flow of digesta through the duodenum of the goat and the sheep.**— J. Physiol. **155**, 134-147. [Author's summary modified.] **2347**

Flow of digesta was measured by interposing an electromagnetic flow meter in a duodenal loop created surgically.

The flow pattern shows peristaltic-antiperistaltic movement; in goats about 40% of the material leaving the stomach is returned to it and in sheep about 5%.

In periods of up to $1\frac{1}{2}$ hr of recording

during the day the mean net aboral duodenal flow ranged from 400 to 1,300 ml./hr for different goats.

Estimates of the total flow through the duodenum per day were made in six separate experiments carried out on two goats and three sheep. Goats on a diet of hay and concentrates had a duodenal flow rate of 12–15 litres/day, and sheep on a diet of hay 11 litres/day.

The errors involved in these estimations are discussed.

Johnston, R. P., Jr., Kesler, E. M. & McCarthy, R. D. (1961). **Absorption of organic acids from the omasum.** — J. Dairy Sci. **44**, 331-339. [Authors' summary modified.] **2348**

Absorption of volatile fatty acids and lactic acid from the omasum of calves was studied by two methods. The first consisted of a study of the relative concentrations of these acids in the contents of the stomach compartments of six calves in relation to concentrations of chromic oxide remaining from previous oral administration.

The second method involved injection of sodium-n-butyrate-1-$C^{14}$ into the exteriorized omasum of two calves. Organic acid levels and distribution of $C^{14}$ activity were determined on samples of blood drawn simultaneously from the omasal vein and the carotid artery at various time intervals during 1 hour following injection. The animals were then killed and concentrations of acids and distribution of label in the ingesta studied. It is concluded that absorption of organic acids does occur from the omasum and apparently in considerable magnitude.

Sanders, E. & Ashworth, C. T. (1961). **A study of particulate intestinal absorption and hepatocellular uptake. Use of polystyrene latex particles.**—Exp. Cell Res. **22**, 137-145. [Authors' summary modified.] **2349**

This study was to elucidate the body mechanisms of absorption, transportation, and disposition of submicroscopic particles in rats. Emulsions of polystyrene latex particles of 2200 Å size were administered to rats in food and by stomach tubes. Electron microscopic study of jejunum, liver, and kidney was then carried out. The latex particles were picked up by intestinal epithelium, carried through the cytoplasm within intact vesicles, discharged into the interstices of the lamina propria, and gained entrance into the lymphatics of the mucosa. The process was identical with that previously shown for lipid particles. The latex particles were also demonstrated in the lumen of glomerular capillaries, in hepatic sinusoids, in the spaces of Disse of the liver, and in the process of being taken into the liver cells by pinocytotic vesicles at the cell membrane. The value of such particles in the study of body processes of handling submicroscopic particles was thus demonstrated. Further evidence was gained for the significant role of the liver in removing particles of this general size range from the blood stream.

Coupland, R. E. & Heath, I. D. (1961). **Chromaffin cells, mast cells and melanin. II. The chromaffin cells of the liver capsule and gut in ungulates.** — J. Endocrin. **22**, 71-76. [Part of authors' summary.] **2350**

Polymorphic cells whose granules give a positive chromaffin reaction have been identified in the liver capsule and gut of the ox, cow and sheep. These chromaffin, dopamine-containing cells are not a special type of cell but are tissue mast cells.

Hruška, K. (1960). Sledování funkce jater in vitro I. Synthesa kyseliny hippurové jaterními řezy krys po poškození jater. **[Studies on liver function. I. Synthesis of hippuric acid by rat liver slices after liver injury.]**— Sborn. vys. Šk. zemědělsk. Brno Ser. B. **8**, 373-380. [In Czech. Summaries in English and Russian.] **2351**

Hippuric acid formation in liver slices from 38 rats weighing 120–290 g., killed 12 hours after s/c inj. of 0·4 ml. of carbon tetrachloride/100 g. body wt., was only about 41% of that of untreated controls. Return to normal values began 3–7 days after injection. The value of these findings for the study of liver function, estimation of damage to the parenchyma and evaluation of efficacy of drugs protecting against liver injury was discussed.—E.G.

Larson, L. L., Kitchell, R. L. & Campbell, B. (1961). **Neural mechanisms in sexual behavior. III. Preputial muscles and their reflexes in bull calves and rams.**—Amer. J. vet. Res. **22**, 37-42. [Authors' summary modified.] **2352**

The nerve supply to the protractor and retractor preputial muscles was investigated in bull calves and rams. The motor supply was from terminal branches of the lateral thoracic nerve. Reflex contraction of these muscles was produced by stimulating the

ventral cutaneous branches of the lower thoracic and the lumbar nerves. The inguinal and the lateral cutaneous femoral nerves were particularly effective in eliciting this reflex. As none of these nerves are blocked by the pudendal nerve block, it is proposed that this reflex is responsible for constriction of the preputial orifice during attempts to protract the penis following a pudendal nerve block.

Yamashita, T. (1960). **Histological studies on the ovaries of sows. II. On the behaviour of argyrophil fibers in the various structures of ovaries. III. On the elastic fibers of the wall of blood vessels in various histological structures.**—Jap. J. vet. Res. **8,** 107-125 & 221-236. [In English.] **2353**

Details were given of the structural types of connective tissue fibres, studied by a silver impregnation method, and the structure of the vascular wall in arterioles of follicles, corpora lutea and "vascular bodies" [*V.B.* **30,** 3741] of the ovaries of non-pregnant sows, during various stages of maturation and regression.
—E.G.

Huckabee, W. E., Metcalf, J., Prystowsky, H. & Barron, D. H. (1961). **Blood flow and oxygen consumption of the pregnant uterus.** —Amer. J. Physiol. **200,** 274-278. **2354**

The 4-aminoantipyrine method was employed for measuring rate of blood flow per kg. of tissue in the pregnant uterus of anaesthetized goats at different stages of pregnancy.—R.M.

Battaglia, F. C., Meschia, G., Blechner, J. & Barron, D. H. (1961). **Effect of insulin and poisons on glucose uptake of sheep and goat placenta.** — Amer. J. Physiol. **200,** 64-66. [Authors' summary modified.] **2355**

The basal glucose uptake of the cotyledons of sheep and goats averaged 1·44 mg./g./hour; that of the foetal chorion averaged 2·22; and that of the maternal uterine mucosa 2·05. The tissue was obtained from pregnant animals between 45 and 55 days' gestation. Insulin, at a concentration of 100 milli-units/ml., had no effect on net glucose utilization of any of these tissues. Nitrogen and cyanide both increased the basal uptake of cotyledons by about 70%. Phloridzin was shown to inhibit both the basal uptake of glucose and the cyanide-accelerated uptake of glucose.

Zhemkova, Z. P. (1961). **[Sex chromatin in placenta of cat and its significance in determination of sex.]**—Dokl. Akad. Nauk SSSR **136,** 1459-1462. [In Russian.] **2356**

From the distribution of sex chromatin, Z. concluded that the cat's placenta was haemochorial and not endotheliochorial.
—R.M.

Rasmussen, H. & Craig, L. C. (1961). **Isolation and characterization of bovine parathyroid hormone.** — J. biol. Chem. **236,** 759-764. [Abst. from authors' summary.] **2357**

The bovine parathyroid hormone has been isolated by sequential phenol extraction, solvent and salt fractionation, trichloroacetic acid precipitation, and prolonged countercurrent distribution. It consists of a single polypeptide chain. The pure protein has both calcium-mobilizing and phosphaturic activities.

Falconer, I. R. & Robertson, H. A. (1961). **Changes in thyroid activity during growth in the sheep.**—J. Endocrin. **22,** 23-30. [Part of authors' summary.] **2358**

The rate constants for thyroid uptake and release of $^{131}I$, the serum protein-bound iodine level and the rate of secretion of thyroid hormone have been determined for sheep from 5 weeks to 7 years old.

Finelli, R. (1960). I. Prime osservazioni sul circolo arterioso coronario in alcuni ruminanti. II. Prime osservazioni comparative sul circolo venoso cardiaco in ruminanti. III. Sulle anastomosi del circolo arterioso coronario: osservazioni comparate e considerazioni. IV. Sulla presenza di formazioni endovasali di blocco nel cuore di alcuni piccoli ruminanti domestici. **[The cardiac vessels of sheep and goats. I. Coronary arteries. II. Cardiac veins. III. Anastomoses of coronary arteries. IV. Intravascular blocks.]**—Boll. Soc. ital. Biol. sper. **36,** 335-336; 336-337; 338-339 & 345-346. **2359**

I. A more extensive area is irrigated by the left coronary artery which is larger than the right. The circumflex artery also is large and ends in the formation of the right interventricular artery—in which the right coronary artery does not take part as it has a smaller area of irrigation. Anastomoses are described.

II. The azygos vein is absent and is replaced by the hemiazygos which also replaces the great cardiac vein. In the hemiazygos there is confluence and separate outflowing of the cardiac veins which it is considered, should rightly be called left interventricular, posterior marginal and right

interventricular. The hemiazygos in turn, flows into the right atrium without giving rise to the formation of the coronary sinus. The small cardiac vein carries directly into the right atrium the blood coming from the major part of the corresponding ventricle. Anastomoses are described.

III. In small ruminants there is a particularly important double system of anastomosis. One is formed by an arterial circle, sometimes complete, surrounding the heart near its base, along the atrio-ventricular groove; the second is formed towards the apex of the heart by the right and left interventricular arteries.

IV. Small arteries supplied with blocking arrangements are present in the apical and ventricular musculature of the heart.

—T.E.G.R

Reich, M. & McDonald, I. R. (1961). **The effect of progressive sodium depletion on corticosteroid secretion by the autotransplanted adrenal gland of conscious sheep.**—J. Endocrin. **21,** 387-400. [Part of authors' introduction.] **2360**

The experiments reported were to discover, first, the stage of Na depletion at which aldosterone could first be detected in the adrenal venous plasma, secondly, the relationship between the degree of Na depletion and the secretion rate of aldosterone, and thirdly, any associated changes in cortisol and corticosterone secretion. Observations were also made on the changes in salivary Na/K ratio, the haematocrit, and the concentrations of plasma protein, Na and K, which resulted from the loss of Na from the body.

Tamura, T. (1960). **Studies on fine vascular arrangements in the adrenal gland of the cat.** — Jap. J. vet. Res. **8,** 295-312. [In English.] **2361**

Vascular patterns of the adrenal gland were investigated in 47 cats by the neoprene latex injection method. The findings were discussed in relation to the stress theory of Selye and the function of the "X zone" of rodents.—R.M.

Bassett, E. G. (1961). **Observations on retractor clitoridis and retractor penis muscles of mammals, with special reference to the ewe.** —J. Anat., Lond. **95,** 61-77. **2362**

A detailed study of the retractor clitoridis muscle in ewes. Comparison was made with analogous structures in male and female cattle, goat, pig, cat and other mammals.—R.M.

Gordon, N. (1961). **The position of the canine prostate gland.**—Amer. J. vet. Res. **22,** 142-146. [Author's summary modified.] **2363**

The position of the prostate gland was determined in 140 dogs up to 19 years old, and eight 52-day foetuses by gross dissection, roentgenography with gross serial sections, and rectal palpation. A relationship was found between position of the prostate, in relation to the brim of the pelvis, and age of the dog. In animals which were prenatal, new-born, and less than 2 months old, the gland was abdominal in position: whereas, in pups 2 to 8 months old, the gland was pelvic in position. After sexual maturity, the prostate increased in size and, with increasing age, changed its position from pelvic to abdominal. After the age of about 10 years, the prostate can be considered as an abdominal organ.

Williams, J. A., Griffen, W. O., Sharma, A. & Wangensteen, O. H. (1961). **Composition and source of secretion from lymphoid aggregations in the rabbit gut.** — Brit. J. exp. Path. **42,** 153-157. [Authors' summary modified.] **2364**

In the alimentary tract of the rabbit, the appendix, the saccus rotundus and the agminate (Peyer's) patches of the ileum all secrete into the lumen of the gut. The secretions of the appendix and saccus rotundus are identical and are serous, alkaline and rich in bicarbonate ions.

Secretion appears to be associated with areas of the gut containing aggregations of lymphoid tissue. The power of secretion, however, is independent of the presence of lymphoid tissue, as secretion is shown to occur in new-born rabbit appendix prior to the development of lymphoid tissue.

The cells responsible for secretion are probably those epithelial cells in close relation to the lymphoid tissue.

McConnell, D., Frajola, W. J. & Deamer, D. W. (1961). **Relation between the inorganic chemistry and biochemistry of bone mineralization.**—Science **133,** 281-282. **2365**

The authors investigated *in vitro* the processes related to the formation of oral calculus; they concluded that the carbonate ion is essential to precipitation of bone mineral

and that the principal biochemical catalyst *in vivo* is carbonic anhydrase. Bacteria are not essential to the precipitation, but they probably play a secondary role in the formation of oral calculus and urinary calculus. —E.V.L.

*See also abst.* **2406** (textbook, anatomy).

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Albright, J. L., Ormiston, E. E., Brodie, B. O. & Witter, L. D. (1961). **Penicillin in milk following intramuscular and intramammary administration of penicillin in normal and mastitic cows.**—J. Amer. vet. med. Ass. **138,** 70-71. [Authors' summary modified.] **2366**

Milk from 8 cows given 6,000,000 units per cow or 5,000 units/lb. body weight (procaine penicillin G in oil suspension) intramuscularly was free from penicillin in the first and subsequent milkings (up to 96 hours) when the official approved test was used. When procaine penicillin G (oil and aqueous bases), 100,000 units, was infused into the right rear quarter of the same cows, penicillin was detected in the milk from all treated quarters for 36 hours. In all 8 cows, milk from the quarters infused with penicillin-aqueous solution was free from penicillin after 72 hours. Penicillin persisted longer when an oil base was used: in 7 of 8 cows for 72 hours, in 5 for 84 hours, and in 4 for 96 hours.

Penicillin was detected in the milk from 12 of 48 untreated quarters (notably the right front quarter), but the amounts present and its persistence were negligible. Its appearance in untreated quarters was temporary, none persisting longer than 24 hours, and the zones of inhibition on the sensitivity test plates were small or questionable.

Plöger, W. (1960). Veterinärhygienische Untersuchungen an einer Tierkörperbeseitigungsanstalt. **[Veterinary hygienic studies on a carcass-disposal plant.]** — Inaug. Diss., Giessen pp. 133. **2367**

The following deficiencies were found in the hygiene of a carcass-disposal plant: lack of separate entrances for vehicles bringing in carcasses and vehicles fetching the animal products; inadequate fencing, permitting the entry of dogs, cats and foxes; lack of sealed doors and sump for the retention of body fluids in the vehicles; washing of vehicles in places where there were no drains to carry away the water; failure to sterilize the water used for washing the vehicles before introduction to the sewer; failure to sterilize waste fluids at over 100°C. for 30 min. as required by the regulations; failure to warn employees of the unsuitability for drinking of the tap water on the premises.—M.G.G.

I. Walker, E. A., Taylor, J. H. & Davis, J. G. (1960). **The effect of chlortetracycline on eviscerated chilled chickens commercially processed in Great Britain.**—J. appl. Bact. **23,** 145-154. **2368**

II. Walker, E. A. & Taylor, J. H. (1960). **The effect of chlortetracycline on eviscerated frozen chickens commercially processed in Great Britain.**—Ibid. 155-157. **2369**

I. Chicken half carcasses dipped for 30 min. in chilled water containing 10 or 20 p.p.m. of chlortetracycline could be stored twice as long at 3°C. as half carcasses dipped in chilled water alone, according to odour and bacterial counts on the skin.

II. Chicken half carcasses were cooled for 2 hours in water and ice, with or without 10 p.p.m. chlortetracycline, and stored, first at −15°C. for 5 months, and then at 3°C. Visible microbial growth appeared after 7·8 days at 3° on carcasses treated with antibiotic and after 6·2 days on controls.—M.G.G.

*See also absts.* **2083** (survey of bakehouses and abattoirs for salmonella); **2084** (human salmonellosis of avian origin); **2148** (toxoplasma from hen's eggs); **2216** (Q fever antibodies in cattle and man in Washington State).

## REPRODUCTION AND REPRODUCTIVE DISORDERS

Aalbers, J. G., Mann, T. & Polge, C. (1961). **Metabolism of boar semen in relation to sperm motility and survival.**—J. Reprod. Fertil. **2,** 42-53. [Authors' summary modified.] **2370**

The metabolism of boar semen differs in several respects from that of bull and ram. Anaerobically, boar spermatozoa convert fructose to lactic acid at a much lower rate than ram or bull spermatozoa, and under these conditions their motility is also characteristically small. Aerobically, boar spermatozoa convert fructose to lactic acid at the same or even lower rate, yet their motility is very high. Apart from lactic acid, boar spermatozoa are capable of utilizing aerobically a number of other substrates,

including glycerol, pyruvic acid and acetic acid, but unlike ram spermatozoa, they lack the ability to oxidize sorbitol. Two other unusual features of the aerobic metabolism of boar semen are (i) an increase in oxygen uptake, which occurs after the semen has been stored, and (ii) the occurrence in the boar seminal plasma of an easily oxidizable substance which is responsible for the plasma's own oxygen uptake.

Savard, K. (1961). **The estrogens of the pregnant mare.**—Endocrinology **68,** 411-416. [Author's abst. modified.] **2371**

The urinary ketonic oestrogens were studied at monthly intervals in five pregnant mares. Oestrone and equilin appear to be the principal components and equilenin a minor constituent of the mares' oestrogens. The levels of equilin rise from the 4–5th months to equal and in some instances exceed those of oestrone in the late months of pregnancy. A partition chromatographic method for the separation of the ketonic phenolic steroids is described.

Stormshak, F. & Erb, R. E. (1961). **Progestins in bovine corpora lutea, ovaries, and adrenals during pregnancy.** — J. Dairy Sci. **44,** 310-320. [Part of authors' summary.] **2372**

The progesterone content of the ovaries and adrenals was generally less than 1 $\mu$g./g. and did not vary significantly during pregnancy. The delta 4-pregnene-20$\beta$-ol-3-one level was very low in ovaries and this compound was not positively identified in adrenals. This study suggests that the corpus luteum remains functional throughout pregnancy in the bovine.

Hawk, H. W., Bitman, J., Cecil, H. C., Wiltbank, J. N., Bond, J. & Sykes, J. F. (1961). **Effect of ovarian hormones on water and electrolytes in the cow uterus.** — Amer. J. Physiol. **200,** 345-347. [Authors' abst. modified.] **2373**

Water and electrolyte characteristics of the uterus varied among groups of oestrous, luteal-phase and ovariectomized cows. In the endometrium, oestrous cows had highest water content, highest extracellular and lowest intracellular water volumes, also highest Na and lowest K concentrations; ovariectomized cows were at the opposite extreme and luteal-phase cows intermediate for each factor. In myometrium, water content was also highest in oestrous cows and lowest in ovariectomized ones. Relative to the other groups, luteal-phase cows had a myometrium low in extracellular and high in intracellular water, low in Na and high in K. Ovariectomized cows given ovarian hormones partially developed the characteristics of intact animals.

Reuber, H. W., Pearson, C. C. & Pope, L. S. (1961). **Genital effects of implanted and oral diethyl-stilbestrol on heifers.**—J. Amer. vet. med. Ass. **138,** 72-77. **2374**

Prolonged oral dosage of 10 mg. per day for several weeks or implants of 18 mg. of diethyl stilboestrol in 21 normal and 18 spayed heifers 7 months old resulted in increase in uterine weight and teat length, and oedema of the vulva. Before the hormone could be recommended for use in breeding stock, further research on the reversibility or permanence of these changes was deemed necessary.—E.G.

Lueker, C. E., Butterworth, E. M. & Schulz, A. R. (1960). **Evidence concerning the origin of androgenic activity in female bovine feces.** — J. Dairy Sci. **43,** 1833-1837. [Authors' summary modified.] **2375**

Androgenic activity in incubated cow dung was dependent upon an androgenic precursor (present only in cow faeces) and microbial activity (present in bull and cow faeces). Progesterone may be the precursor of androgen.

Haraszti, J. (1961). **Problem of the hepato-ovarial syndrome.** — Acta vet. Acad. Sci. hung. **11,** 91-98. [In English. Author's summary modified.] **2376**

Author experimentally confirmed that the liver plays an active role in the breakdown of oestrone. A group of dogs was given 1 mg. oestrone every 2–3 days, a second group 0·5 mg. oestrone and also carbon tetrachloride, administered orally, the third group 1 mg. oestrone and 50 mg. thiamine subcutaneously. All signs of oestrus developed in the first group 50–52 days, in the second 10–12 days after the first injection, but the third group did not show these signs even after three months. Hysterectomy and histological examinations after the third month showed typical features of endometrial hyperplasia with cystic dilatation of the glands in the members of the first and of the second group, while microscopic findings in the third group (treated with thiamine) were negative.

Tullner, W. W. (1961). **Uterotrophic action of the insecticide methoxychlor.**—Science **133,** 647-648. [Author's abst. modified.] **2377**

Dusting of rats and mice, as well as oral treatment with the insecticide methoxychlor, increased the weight of the uterus. Ablation of the ovaries, adrenals, or pituitary did not alter this effect, thus indicating a direct action on the uterus. It is apparent that application of this insecticide to animals used for hormonal experiments introduces an additional variable.

Kirkham, K. E. (1961). **Pituitary gonadotrophins during the ovulatory cycle of the domestic fowl.**—Endocrinology **68,** 350-353. [Author's abst. modified.] **2378**

Laying hens were killed 8 hours before or 2 hours after ovulation. The pituitary glands were collected, pooled, and their gonadotrophic potency compared by using three bioassay methods.

The gonadotrophic potency of pituitaries tended to be higher before than after ovulation, but only in one experiment were the results statistically significant.

The results indicated that before ovulation a gonadotrophin is released from the pituitary. Because of the relative non-specificity of the bioassay methods used, it was not possible to determine whether this gonadotrophin was FSH or LH.

Donnelly, R. B. & Stone, G. M. (1961). **A comparison of two gonadotrophic extracts, PMS and HCG, with a critical examination of assay procedure.**—J. Endocrin. **21,** 459-467. [Authors' summary modified.] **2379**

The method of assay for gonadotrophin developed by Claringbold & Lamond [*V.B.* **28,** 2360] has been found satisfactory for a wide range of management conditions and strains of mice.

It gives similar results for human chorionic gonadotrophin and pregnant mares' serum and these results do not differ from strain to strain of mouse.

Aehnelt, E., Konermann, H. & Grunert, E. (1961). Fortpflanzungsstörungen in der Pferdezucht und ihre neuzeitliche Bekämpfung. **[Reproductive disorders in horses and their control.]**—Dtsch. tierärztl. Wschr. **68,** 107-110 & 146-151. [Summary in English.] **2380**

A review of the literature on reproductive disorders in horses caused by abnormalities in the oestrous cycle, infectious abortion due to salmonella, streptococci or virus, and sporadic abortion of traumatic, nutritional, toxic or hereditary origin, with a discussion of methods of prevention and control.—E.G.

Eibl, K. (1960). Die symptomlose Sterilität beim Rind im süddeutschen Raum. **[Sterility in cattle without clinical symptoms in South Germany.]** — Zuchthyg. FortpflStörung. u. Besamung **4,** 408-411. [Summaries in English and Russian.] **2381**

Failure of cows to conceive to first service or insemination was stated to be mainly due to variations in the fertilizing potential of bulls, although there was as a rule no difference in the semen picture from good or poor fertilizers. Factors affecting male fertility to a certain extent were age, breed, season, vitamin A supply and frequency of service or semen collection. The conception rate after first service was about 70%, the final rate about 85%. Effects of the correct time of mating or insemination, age of semen, type of diluent, insemination technique, etc., were discussed. Suggested measures to increase conception rates included selection of sires of high fertility and repeated service rather than treatment of clin. healthy cows which had failed to conceive at first service.—E.G.

Davidson, J. G. & Roberts, S. J. (1961). **Fetal mummification. A study among dairy cattle.**—Cornell Vet. **51,** 34-46. [Authors' summary modified.] **2382**

The possibility that osmotic pressure plays a role in causing mummification was suggested, but the need for identification of the inter-placental blood, was considered relevant.

Production of a mummified foetus did not seem to affect the reproductive capacity of the dam, and the age of the cow had no influence on the occurrence of this condition.

A method of adjustment—to obviate bias in analysis of selected data—was presented, and it was suggested that revision of previous conclusions based on unbiased estimates should be undertaken.

Evidence for a genetic association with this anomaly was presented, but it was not possible to conclude that a single lethal recessive transmission was responsible. Further study was recommended.

Clegg, E. J. (1961). **Further studies on artificial cryptorchidism: quantitative changes in the interstitial cells of the rat.**—J. Endocrin. **21,** 433-441. [Author's summary.] **2383**

Artificial cryptorchidism is followed about the 21st day after operation by a transient increase in the numbers of interstitial and Leydig cells of the testis of the rat. At other times the total numbers of these cells are not significantly altered, but the proportion of non-senile Leydig cells is increased over the whole experimental period. The 21st day is the period of lowest production of androgen (as measured by citric acid and fructose levels in the accessory reproductive organs). The transient rise in cell numbers is considered to be due to the operation of the normal pituitary-gonad relationship, and the subsequent fall is attributed to the diminished ability of the heat-damaged interstitial tissue to react to gonadotrophins.

*See also absts.* **2098** (coital transmission of leptospirosis); **2099** (leptospiral abortion); **2113** (causes of infectious abortion); **2137-2138** (trichomoniasis); **2180** (virus abortion in ewes); **2267** (pasture and fertility in sows); **2296** (sperm production in X-irradiated boars); **2300** (effect or irradiated meat on growth and reproduction in dogs); **2352** (reflexes in preputial muscles in bulls and rams); **2354** (blood flow in the pregnant uterus); **2353** (effect of insulin and poisons on placental glucose uptake); **2356** (sex chromatin in cat placenta); **2362** (retractor clitoridis and penis in sheep).

## TECHNIQUE AND APPARATUS

Haenel, H. (1961). Zur Auxanographie mikrobiologisch wirksamer Faktoren in Organen und Organinhalt. Methodische Mitteilung. **[A technique for demonstrating factors inhibiting micro-organisms in organs and organ contents: tests on fowls.]** — Zbl. Bakt. I. (Orig.) **181,** 125-136. [Summaries in English, French, Spanish and Russian. English summary modified.] **2384**

Large plates (47 × 28 cm.) of different agar media were seeded with *B. cereus, E. coli, Staph. aureus, L. casei, Str. faecalis, Candida albicans, Saccharomyces carlsbergensis* or *Neurospora crassa.* The intestine of chickens, from the palate to the cloaca, and its adjacent organs were cut in strips, and these strips were placed on the seeded plates. The same was done with pieces of other organs (brain, eye, trachea, heart, lung, kidney, bursa of Fabricius, skin, muscle, toes, spleen). After incubation for 10, 15 or 20 hours, inhibition or stimulation of multiplication of the test organisms was visible.

Inhibiting agents were detected especially in the lining of the gizzard and in the small intestine and its contents. Liver, gall bladder, and bile, colon and its contents showed varying, though generally somewhat lower inhibiting activities. The cranial part of the intestine and the other organs tested generally proved to be inactive. The two strains of fungi were greatly stimulated by the wall of the small and large intestine and their contents. The authors named this technique auxanography.

Ebner, K. E., Hoover, C. R., Hageman, E. C. & Larson, B. L. (1961). **Cultivation and properties of bovine mammary cell cultures.** —Exp. Cell Res. **23,** 373-385. [Authors' summary modified.] **2385**

Cell cultures derived from bovine mammary glands have been cultivated for up to 2½ years and have had 30 to 40 passages. For many months most cultures are composed of stable populations of predominantly epithelioid cells which have a generation time of about four days. These cultures retain considerable ability to organise the fibroblastic-like cells. As the cultures age, most tend to become more fibroblastic and lose their ability to organize. Glycogen synthesis was more active in younger and more epithelioid cultures. Though the cells do not have a rapid generation time, the period of stabilized growth is long enough to provide almost unlimited numbers of cells.

Beutner, E. H. (1961). **Immunofluorescent staining: the fluorescent antibody method.**— Bact. Rev. **25,** 49-76. **2386**

A review of the principles of this method and its applications in bacteriology, virology and immunology.—R.M.

Owen, J. B. & Ingleton, J. W. (1961). **A method of collecting faeces from ewes.**— Anim. Prod. **3,** 63-64. **2387**

An illustrated description of a deflector made of polythene and rubber that fits closely into the concavity between the anus and vulva of the ewe, and is held in position by a harness. Faeces are collected in a polythene bag attached to the deflector.—M.G.G.

Brown, W. O. & Badman, H. G. (1961). **Liquid-scintillation counting of $^{14}$C-labelled animal tissues at high efficiency.**—Biochem. J. **78,** 571-578. **2388**

The authors tested liver, oviduct and blood from chicks injected i/p with glycine labelled with radiocarbon.—R.M.

I. Glascock, R. F. & Jones, H. E. H. (1961). **The uptake of hexoestrol by plants and its**

**persistence in soil.** — J. Endocrin. **21,** 373-380. **2389**

II. Broom, W. A., Gurd, M. R., Harmer, G. L. M. & Randall, S. S. (1961). **The stability of hexoestrol in soil and its uptake by plants.**—Ibid. 381-385. [Authors' summaries modified.] **2390**

I. A grass-clover mixture and turnips were grown on control plots and on plots dressed with hexoestrol at rates of 3·7 and 14·8 g. acre; that applied at the lower rate was labelled with tritium.

No oestrogenic activity was detected in any of the crop samples taken at intervals over 4 months, indicating that the hexoestrol content was less than the minimum which was detectable: between 10 and 19 μg./kg. fresh weight.

The specific activities of plant samples from the plots dressed with labelled hexoestrol corresponded to 0·12–0·49 μg. hexoestrol/kg. fresh weight which is clinically insignificant for the consumer.

An unidentified oestrogen, with marked local variations in concentration, was detected in the soil of the control plots.

During 3 months there was no appreciable change in the specific activity of the soil dressed with labelled hexoestrol, showing that neither hexoestrol nor any possible decomposition products had been lost by evaporation or by leaching.

II. Strips of arable land were treated with hexoestrol at 10 ug. and 50 μg./kg., harrowed into the top 4 in. of soil.

The hexoestrol disappeared from the soil within a few weeks. Where the initial concentration was 10 μg./kg., no hexoestrol could be detected after 4 weeks, the lowest detectable level being 4 μg./kg. Where the initial concentration was 50 μg./kg., the concentration had fallen to about 4 μg./kg. after 4 weeks and to about 2 μg./kg. after 8 weeks.

Part of the loss is due to leaching into lower layers of the soil.

No oestrogenic activity was demonstrable in grass grown on the treated plots when cut at 7, 17 or 22 weeks after sowing, nor in cabbage cut at 8 or 16 weeks after planting, nor cut at 7 or 17 weeks after sowing. Clover grown on the treated plots showed a low level of oestrogenic activity when cut at 22 weeks. Clover grown on untreated soil under the same conditions showed no activity.

Churý, J. (1960). Experimentální příspěvek k chromatografickému dělení sexuálně aktivních látek v rostlinných výtažcích. [**Chromatographic differentiation of oestrogenic substances in plant extracts.**]—Sborn. vys. Šk. zemědělsk. Brno Ser. B. **8,** 411-419. [In Czech. Summaries in German and Russian.] **2391**

The technique was described of chromatographic differentiation of oestrogenic substances contained in extracts from hops, kale, maize and three species of clover, using a solvent consisting of 2 parts of chloroform, 1 part of acetic acid and 1 part of water. The oestrogenic effect of oily suspensions of these substances, tested in infantile female mice, varied considerably.—E.G.

Varenne, H. (1960). Contribution à l'amélioration des conditions d'élevage pour certains animaux de laboratoire. Adaptation à l'élevage industriel. [**Improvement of conditions of breeding and management of laboratory animals.**] — Rec. Méd. vét. **136,** 477-488. [Summaries in English and Spanish.] **2392**

A detailed description is given of rabbit cages provided with improved facilities for drainage, feeding and automatic watering. Mouse and g.pig cages are also provided with similar facilities. Environmental temperature is thermostatically controlled. The advantages of these improvements are discussed.

—T.E.G.R.

*See also abstr.* **2104** (purification of Cl. welchii toxoid); **2162** (stain for Negri bodies).

## REPORTS

Great Britain. (1960). **Committee for Colonial Agricultural, Animal Health and Forestry Research 1959-1960. Fifteenth Annual Report.** Colonial Research 1959-1960. pp. 23-160. [London: Colonial Office.] [Items of veterinary interest pp. 43-49 and 119-129.] **2393**

The work of the Division of virus diseases was again concentrated on Rinderpest and interesting and important results were achieved. Pigs of European origin were fully susceptible to rinderpest by inoculation or by feeding on infected meat and the disease spread readily from such pigs to susceptible pigs or cattle. The disease in European pigs is usually inapparent.

In collaboration with Uganda Veterinary

Services RINDERPEST was confirmed in goats in Karamoja District. This was the first detection of the disease in goats in East Africa and its existence will complicate future eradication measures.

The Division dealing with protozoal and arthropod-borne diseases has continued long-term research into EAST COAST FEVER and other theileria infections.

Research into AFRICAN SWINE FEVER has made good progress. The haemadsorption inhibition test developed in 1958 has been successfully used in the typing of viruses. Thirty papers have been published by the staff.

Research in animal diseases tends to develop in the larger territories which have large and valuable industries. Smaller colonies usually maintain veterinary services with diagnostic facilities necessary for disease control. The larger territories usually maintain close contact with veterinary services in the United Kingdom and sometimes with Australia.

SARCOPTIC MANGE in sheep was diagnosed in Cyprus when the 1958–59 lamb crop became affected. The parasite was established among the fat-tailed local flocks. Dipping alone did not afford satisfactory control and hand treatment was also required.

It is believed that VIRUS ABORTION in goats has been present in Cyprus for some years but diagnosis has been hindered because foetal membranes are rarely available for examination.

A survey of the incidence of JOHNE'S DISEASE in Kenya continues: 2,287 serum samples were examined by the complement-fixation test, 137 being positive.

Epidemiological studies continued on FOOT AND MOUTH DISEASE and the World Reference Library reported that out of 233 samples submitted 59·1% were of type O, 15·9% were of type A, 1·8% SAT while 30·3% failed to give a result.

Investigation of RINDERPEST and rinderpest-like diseases in game in Tanganyika showed that in some cases the disease was rinderpest, but in others no definite diagnosis could be made though rinderpest could not be excluded. The Report gives a list of 34 papers published by the staff.—D. S. RABAGLIATI.

New Zealand. (1960). **Report of the Department of Agriculture for the year ended 31st March, 1960.** [Smallfield, P. W.] pp. 197. Wellington: R. E. Owen, Govt. Printer. [Animal Research Division, pp. 156-195.] **2394**

Tuberculin-testing of the town milk producing cattle has progressed steadily, 83,425 animals from 1,359 herds have received two annual clear tests. A critical factor in the testing has been a lack of staff. In the initial tests up to 10·3% of reactors occurred but these were reduced to 1·1% on repeat testing.

Continued improvement was made in the over-all standard of hygiene in meat export works, abattoirs, canneries and meat packing houses. Pig production was the highest since 1942.

In the diagnosis service of the Research Division 57,801 specimens were examined from 14,773 cases.

Under the heading of Sheep Breeding Projects, the experiment designed to measure the possibility of increasing the lambing percentage of Romney ewes through selective breeding has been in progress for 12 years.

Much work was carried out on FACIAL ECZEMA; study of the pathology of field cases has revealed lesions in the spleen, liver and adrenal gland, not previously described as characteristic of this condition.

In cattle breeding projects an initial assessment of a rectal palpation technique for establishing the stage of pregnancy is being attempted with a view to its application to measuring breeding efficiency in range cattle.

The only cases of HYPERKERATOSIS in cattle in New Zealand to date have been in the Ashburton area and all associated with wood preservative which contains pentachloronaphthalene.

A killed vaccine against VIBRIOSIS in cattle has been effective in cattle exposed to natural infection. Further studies are in progress to determine whether a more efficient vaccine can be developed.

*Leptospira icterohaemorrhagiae AB* has been isolated for the first time in New Zealand in calves on several farms in the Franklin District and two in Waikato. The average age of affected calves is four to six weeks and the duration of the clinical syndrome is rarely more than 36 hours.—D. S. RABAGLIATI.

Uganda Protectorate. (1960). **Annual Report of the Department of Veterinary Services and Animal Industry for the year ended 31st December, 1959.** [Randall, J. B.] pp. 48. Entebbe: Govt. Printer. Shs. 3. **2395**

Uganda carries about 3,590,000 cattle, an increase of 160,000 over the preceding year, while sheep and goats total 3,724,000. There

was a 20% increase in the meat supplies during the year.

A serious situation is reported in the staff situation in the field, five veterinary officers resigning to take posts in the United Kingdom. There were also six vacancies for the Makerere-trained assistant veterinary officers.

Disease control was generally satisfactory except in the Karamoja District where a serious RINDERPEST epidemic occurred with a reported loss of at least 500 cattle; 22,300 cattle were inoculated with caprinized virus vaccine.

CONTAGIOUS PLEUROPNEUMONIA was confirmed at Paloga and in Agoro, the first outbreaks for the last ten years. Control of this disease presents many difficulties.

TRYPANOSOMIASIS control involved the treatment of 179,300 cattle with antrycide-dimethysulphate and in addition 30,000 others were maintained in areas of light fly density under the protection of antrycide prosalt.

EAST COAST FEVER and other tick-borne diseases continued to take a toll of the cattle population.

It was necessary to increase the teaching and administrative staff at the Veterinary Training Institute at Entebbe. During the year extensive improvements were made in the buildings and much new equipment was installed. The premises can now accommodate 24 students.

Under the Research Services, research was undertaken in collaboration with the East African Research Association on *Cysticercus bovis,* and RINDERPEST was further studied in lambs and kids.

Considerable progress was made in the investigation of important infectious and parasitic diseases.

The Laboratory continued to undertake special diagnostic investigation and a summary of this is shown in tabular form. The Report concludes with nine statistical tables.

—D. S. RABAGLIATI.

Nyasaland. (1960). **Annual Report, 1959. Department of Veterinary Services and Animal Industry, Nyasaland.** [Faulkner, D. E.] pp. 56. Zomba, Nyasaland: Govt. Printer. 5s. 6d. **2396**

Nyasaland had 356,514 cattle, 75,297 sheep, 460,611 goats, 119,913 pigs and a small number of horses and donkeys.

Nine deaths from BLACKLEG were recorded. Animals immunized were 9,812 cattle and 566 sheep.

TUBERCULOSIS persists in the Mzimba District and also in the S.W. of the Karanga District; it is also thought to be prevalent along the cattle route from the Northern Province.

In an outbreak of *Vibrio fetus* infection in a herd 62% of the cows were infected. A.I. has helped to control further spread of infection.

"The presence of Q FEVER rickettsia in normal sheep brains as a non-pathogenic entity was established during an investigation of deaths among sheep at the Chipazi Veterinary Centre". A Q-fever antigen supplied by the W.H.O. was used to test 2,000 samples of sera and this showed that 50% of the cattle on the Departmental Livestock Improvement Centres were positive. No African-owned cattle were positive.

TRYPANOSOMIASIS: the species identified were *Trypanosoma brucei, T. congolense, T. vivax* and *T. theileri* (only occasionally).

There has been a decrease in the areas of tsetse infestation during the past fifty years with the large increase in the population and the consequent extension of the areas of cultivation. An attempt was made to eradicate the disease in the lower Shire River areas, where there were only about 5,000 cattle to be treated. Most of these areas are away from the *Glossina morsitans* infested country but where the cattle were concentrated there was every opportunity for infection to be transmitted directly by blood-sucking flies other than glossina. The drug used was ethidium bromide, and if this failed, Berenil. It was found essential in this campaign also to control tick infestation in the cattle. A dipping tank was provided.

TICK-BORNE DISEASES occur in all domestic animals and have been the main problem since the first Veterinary Surgeon was appointed in 1910. Dipping and spraying were started in 1913 to control tick infestation and by 1929 there were 78 dipping tanks in the Shire Highlands and along the cattle route from the Northern Province to Blantyre. Facilities have now been examined as a result of the large increase in the numbers of livestock and also of funds for staff buildings and equipment for Veterinary Centres, Livestock Improvement Stations, dipping tanks etc. The recommendations made in 1913 for dealing with EAST COAST FEVER by the provision of dipping tanks in the Northern Province and other E.C.F. infected parts of the Protectorate were thus being implemented in 1959. The

blood parasites transmitted by ticks were *Babesia bovis, B. bigemina* and *B. canis; Theileria parva* and *Theileria* spp.; *Anaplasma marginale* and *Gonderia* spp.; *Rickettsia ruminantium, R. canis* and *R. burneti* in sheep's brains and also *Rickettsia* in pigs, were identified.

An outbreak of FOOT AND MOUTH DISEASE occurred on the Songwe River which is the dividing boundary between Nyasaland and Tanganyika. The disease was confined to the cattle of the Wankonde who live on the banks of the river from near its mouth on Lake Nyasa for a few miles inland, on the plains which provide pastures for the cattle throughout the year. The type of virus was South African type 2. (S.A.T.2.) and the disease had spread from neighbouring herds in Tanganyika. The measures applied were successful in preventing the spread of the disease further south.

RABIES spread from the Central to the Northern Province and also into four districts of the Southern Province. Infections were recorded in four jackals among the 33 positive cases. 12,552 rabies vaccine injections were given and 6,565 dogs destroyed. Five people died of the disease.

One outbreak of SWINE FEVER occurred.

NEWCASTLE DISEASE, introduced into the country in 1955, is now endemic. COCCIDIOSIS occurs among exotic poultry when taken from the hatchery to the villages.

Owing to the political disturbances and one V.R.O. being seconded full time to the security forces and the second V.R.O. doing part time duties there was a disturbance in the work at the Laboratory and at the end of the year there were two vacancies in the staff. Diagnostic specimens examined totalled 15,690. There is a summary of some of the results given in an appendix to the report.

Other sections of the Report are Animal Husbandry, Livestock Production and Marketing, Livestock Improvement and Education, Administration 12 pages, and 6 pages of photo reproductions illustrating these activities. The Appendices cover 25 pages.

—J. A. GRIFFITHS.

I. Pachev, I. P. (1960). Rapport sur l'état sanitaire des animaux domestiques en Bulgarie au 1er mai 1960. **[Diseases of livestock in Bulgaria in 1960.]**—Bull. Off. int. Epiz. **54,** May pp. 272-277. **2397**

II. Oberfeld, H. (1960). La situation zoosanitaire en Pologne. **[Control of diseases of livestock in Poland.]**—Ibid. pp. 288-301. [Summaries in English and Spanish.] **2398**

III. Van Den Born, J.-M. (1960). La situation sanitaire vétérinaire aux Pays-Bas. **[Control of diseases of livestock in the Netherlands.]** —Ibid. pp. 302-309. **2399**

I. Measures adopted in Bulgaria since 1945 have reduced the incidence of certain diseases to sporadic proportions and achieved the complete eradication of others. There have been no cases of: DOURINE, since 1953; GLANDERS and SHEEP POX, since 1954; RABIES since 1958. A list is given of diseases which still occur and control measures are outlined.

II. Animal health in Poland since the second world war is reviewed in detail. GLANDERS and DOURINE have not been reported since 1957 and 1951 respectively and there was only one outbreak of EQUINE INFECTIOUS ANAEMIA in 1959. Outbreaks of FOOT AND MOUTH DISEASE and SWINE FEVER occurred up to 1959 and HAEMORRHAGIC SEPTICAEMIA in cattle assumed serious proportions during the last 5 years. ANTHRAX still occurs. In SWINE ERYSIPELAS some control was achieved with an avirulent vaccine. TESCHEN DISEASE (controlled by slaughter) and RABIES (controlled by compulsory vaccination) occur sporadically. NEWCASTLE DISEASE is controlled by compulsory vaccination (in threatened areas). A state-supported plan for the eradication of bovine TUBERCULOSIS was launched in 1959 and will operate for 10–15 years. Bovine BRUCELLOSIS is controlled by elimination of infected bulls, segregation of infected cows and calf vaccination with *Br. abortus* Strain 19; the disease occurs sporadically in small herds and its incidence in large herds is about 5%.

III. The 5-year plan for the eradication of bovine TUBERCULOSIS was concluded in 1956 and the incidence of tuberculin reactors in 1959 was 0·02%. For the control of BRUCELLOSIS in cattle, herds are classified as: infected; ring-test negative (those negative during the last 3 successive trimesters); free (those negative to the ring-test and in which the individual blood tests have been negative for 12 or more months). Cattle owners are co-operative and early eradication is envisaged. Vaccination is successfully employed against FOOT AND MOUTH DISEASE and in rare outbreaks in pigs or unvaccinated calves resort is had to slaughter. SWINE FEVER is a notifiable disease. Owners are

advised to slaughter infected and suspect animals and vaccinate the rest; vaccination is not popular. ATROPHIC RHINITIS has been in existence since 1958. Slaughter gives good results but the problem is not yet solved. NEWCASTLE DISEASE is controlled by slaughter; INFECTIOUS BRONCHITIS and FOWL POX by vaccination. CORYZA is a common disease of fowls and diagnosis is difficult. Other diseases dealt with are LEUCOSIS, DUCK HEPATITIS, FOOT ROT in sheep and SALMONELLOSIS.—T.E.G.R.

## BOOK REVIEWS

Nikolitsch, M. (1961). Die Tollwut: Ihre neuesten Forschungsergebnisse. **[Rabies : recent advances.]** pp. 40. Stuttgart: Gustav Fischer. DM 5.80. **2400**

This work is based on a lecture given at a W.H.O. post-graduate course for veterinarians, at Zagreb in 1960. The author is the director of the Pasteur Institute Novi Sad, Yugoslavia. It contains short chapters on fixed virus, the central nervous system, penetration of virus into the c.n.s., geographical distribution of the disease, role of bats in transmission, control, post- and pre-infection vaccination, preventive vaccination in dogs, Flury vaccine, and evaluation of vaccines.—E.G.

Smith, K. M. & Lauffer, M. A. [Edited by.] (1960). **Advances in virus research. Volume 7.** pp. ix+397. New York (& London): Academic Press. $10.00. **2401**

The two most interesting to veterinarians of the 10 articles in this volume are :— the relationships of the viruses of measles, canine distemper and rinderpest, by J. Warren (Terre Haute, Indiana); and basic mechanisms of non-specific resistance to viruses in animals and man, by A. A. Smorodintsev (Leningrad, U.S.S.R.). Other topics are biosynthesis of poliovirus in cell cultures; polyoma virus; transformation of fibroma to myxoma virus; structure of small viruses. Three other articles deal with plant viruses.—R.M.

Euzéby, J. (1960). Le parasitisme en pathologie aviaire: notions de synthèse. **[Parasites in avian pathology.]** pp. 105. Paris: Vigot Frères. **2402**

In this monograph the term parasite is used in its conventional and voluntarily restrictive sense and the parasites dealt with are animal pathogens (protozoa, helminths and arthropods) and microscopic pathogenic fungi *(Sabouraudites gallinae, Aspergillus fumigatus* and *Candida albicans)*. The book is in three parts of which the first, in three sub-sections, presents the pathological aspects : (syndromes associated with the skin and its appendages, the digestive, respiratory and nervous systems, joints and locomotion, egg laying and incubation, and general symptoms common to different parasitic diseases); indirect pathogenic action; and diagnosis. Aetiology is discussed in the second part which, also, is in three sub-sections on : developmental cycle of parasites, sensitivity to infection, and mode of infection. The third part is in two sections, on treatment and prophylaxis. There are 85 illustrations.
—T.E.G.R.

Brandly, C. A. & Jungherr, E. L. [Edited by.] (1960). **Advances in veterinary science. Volume 6.** pp. xi+382. New York (& London): Academic Press. $12.00. **2403**

This 6th volume of a well known series contains seven reviews, the titles of which are :— screw-worm research and eradication, by R. C. Bushland; foot-and-mouth disease and related vesicular diseases, by W. M. Henderson; the effect of nutrition on the production of disease by bacteria, rickettsia, and viruses, by D. H. Sprunt & C. Flanigan; anaplasmosis, by M. Ristic; comparative pathology of arthritis, by L. Sokoloff; coccidioidomycosis, by K. T. Maddy; canine distemper (la maladie de Carré), by J. R. Gorham.

There is also a 16-page index to authors cited in the text and a 14-page subject index.
—R.M.

Mashkovskii, M. D. (1960). **[Therapeutic drugs.]** pp. 767. Moscow: Gosud. izdatel'stvo meditsinskoi literatury. 4th edit. 3r. 32k. [In Russian.] **2404**

This Russian pharmacopoeia will prove very useful for interpreting the names of drugs used in the U.S.S.R., because synonyms and chemical composition are given. Examples of drugs currently used in veterinary medicine that are defined in this book are :— albomycin, biomycin, bicillin, levomycetin, sintomycin, filixan, aminoacriquine, sinestrol, "therapeutic serum (LSB), kampolon, "ASD", ditrazin. Dosages and indications are for human use only. There is also a 90-page bibliography on

drugs developed in the U.S.S.R. between 1950 and 1959. Indexes are in Russian and in Latin. The book costs 45s. in the U.K.

—R.M.

Berrier, H. H. (1961). **Diagnostic aids in the practice of veterinary medicine.** pp. 191. St. Louis, Missouri: C. W. Alban & Co. 2nd Edit. $4.75. **2405**

This little book is a description of techniques, materials and apparatus. It is a laboratory manual for the practising veterinary surgeon and it covers haematology, bacteriology, toxicology; tests for function of liver, kidney, pancreas, pituitary; tests for milk, faeces, pregnancy and fertility. Apparatus or chemicals needed for each test are specified together with name of the firm from which they may be obtained and the price in dollars. The author is perhaps too dogmatic about which proprietary product should be used for a given test. Naturally these details lose their value outside the U.S.A., although a list of foreign distributors of the American products is given.—R.M.

Koch, T. (1960). Lehrbuch der Veterinär-Anatomie. Band I. Bewegungsapparat. **[Textbook of veterinary anatomy. Vol. I. Locomotory organs.]** pp. xii+380. Jena: Gustav Fischer. DM 30. **2406**

This volume is introduced by a section dealing with the zoological position of the domestic animals, with their domestication and with a general description of each of the species. The locomotory system is then described in the usual sequence of osteology, arthrology and myology. Each bone is given a general description and comments are added for each of the domestic species. A similar technique is used for the joints and muscles, except that in these systems the use of the horse as a type is more marked than in the osteology section. As an instance of the prominence of this species there are about twenty illustrations of the horse, two of the dog and one of the ox in the arthrology section. The illustrations are, however, very good and the general arrangement of the text is pleasing. There is a final chapter on the statics and dynamics of the body and the work is rounded off by a brief encyclopaedia of the anatomical terms used in the text.

With the change in the relative importance of the various domestic species, this text, even if it were translated, would not be of great interest in many English-speaking countries since much more information is needed nowadays on the ruminants. Although the illustrations are good, there are few that are not almost as well done in other textbooks which give a broader coverage to veterinary anatomy. This volume is, however, quite well produced and moderately priced by modern standards.—R. N. Smith.

—. (1960). **Techniques and procedures in animal production research.** pp. vi+228. Beltsville, Md: American Society of Animal Production. **2407**

This monograph assembles information on experimental procedures, especially those applicable to farm animals, and statistical methods. Its six papers are:— design and analysis of animal husbandry experiments by C. R. Henderson; techniques for research in quantitative animal genetics by G. E. Dickerson; research techniques in physiology of reproduction in the female by L. E. Casida; design for comparative feeding trials by E. W. Crampton; methods employed in nutrition research by I. L. Lindahl; meat research techniques pertinent to animal production research by O. G. Hankins, A. M. Gaddis & W. L. Sulbacher.—R.M.

Bierer, B. W. (1955). **A short history of veterinary medicine in America.** pp. xi+113. Michigan: State University Press. $3.00. **2408**

Bierer has written a book designed to inform the pre-veterinary student about the beginnings of work on animal health and the development of the subject in America. A foreword by Professor J. F. Smithcors, himself a student and author on veterinary history, emphasizes the advantage of some knowledge of the past and of the contributions to the development of veterinary science by our predecessors.

The book is dated 1955 and was not seen until the author sent a copy for review in November 1960; no intimation of its existence had been found in the course of preparing *Index Veterinarius.*

The subject is covered in four chapters, Out of the Past; Animal Plagues and Agricultural Progress; Disease Control Through Scientific Progress; and Medical Schools and Scientific Progress.

It is a commonplace that one generation knows little about even the immediately preceding one. The proportion of school leavers with any real knowledge of history is relatively small; the extent to which veterinary undergraduates are encouraged to read veterinary history must be almost negligible.

The literature on veterinary history is rich and it is also interesting. There is still room for selectively written, concise volumes for special types of readers and Bierer has certainly written one. The rounding off of instruction in technical detail by some understanding of the manner in which developments have been brought about and of the processes of experience and thought that have played their roles, should help to make a broadly based professional man or woman, rather than an artificer.

An extensive bibliography rounds off this volume, particularly on matters relating to the United States.—W.A.P.

Usovsky, B. N., Linnik, E. F., Podkamennykh, I. M. & Shkonde, E. I. (1960). **Russian-English agricultural dictionary.** pp. 504. Moscow: Central Editorial Board, Foreign-Language Scientific and Technical Dictionaries, (Fizmatgiz). 1r. 61k. **2409**

This is probably the first Russian-English agricultural dictionary. An English-Russian version has existed for some time and its third edition was published in Moscow in 1956. There is also a Russian-German agricultural dictionary, published in Moscow in 1955.

It contains over 30,000 terms on every branch of agriculture, including animal husbandry, veterinary science, microbiology, biometrics. There is also a most useful list of abbreviations, such as those used for the names of research institutes.

Terms for animals at various stages of life, which are often difficult to find in the ordinary Russian-English dictionary, are done well, although there are some mistakes in the English equivalents. For instance the term "skot, melkii rogatyi" is rendered as 'small cattle' although it means sheep and goats, and "skot, myaso-molochnyi" is rendered as 'grangers cattle' whereas it means dual-purpose dairy and beef cattle. Other errors can be found under the heading "kleshch", a term which covers mites and ticks.

Terms for most diseases of animals are included, and no major errors could be found in these. Those who have to consult Russian veterinary literature will find this dictionary very useful. It costs 20s. in the United Kingdom.—R.M.

## BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

Anthony, D. J. & Lewis, E. F. (1961). **Diseases of the pig. A handbook of the diseases of the pig with an introduction to its husbandry.** pp. xi+407. London: Bailliére, Tindall & Cox. 5th edit. 35s.

Bain, R. V. S. (1961). **Haemorrhagic septicaemia of cattle and buffaloes: a laboratory manual for livestock development and improvement.** pp. viii+65. Bangkok: South-East Asia Treaty Organization.

Gunsalus, I. C. & Stanier, R. Y. (1961). **The bacteria: a treatise on structure and function. Volume II. Metabolism.** pp. xv+572. New York (& London): Academic Press. $15.00.

Nassal, J. (1961). Experimentelle Untersuchungen über die Isolierung, Differenzierung und Variabilität der Tuberkulosebakterien. **[Experimental studies on the isolation, differentiation and variability of tubercle bacilli.]** pp. 83. Berlin (& Hamburg): Paul Parey. DM 12.

Nemeséri, L. & Holló, F. (1961). Állatorvosi parazitológiai diagnosztika. **[Veterinary parasitologiacal diagnosis.]** pp. 320. Budapest: Mezogazdasági Kiadó. 2nd revised edit. [In Hungarian.]

Park, R. D. (1961). **Animal husbandry.** pp. xii+244. London: Oxford University Press. 18s.

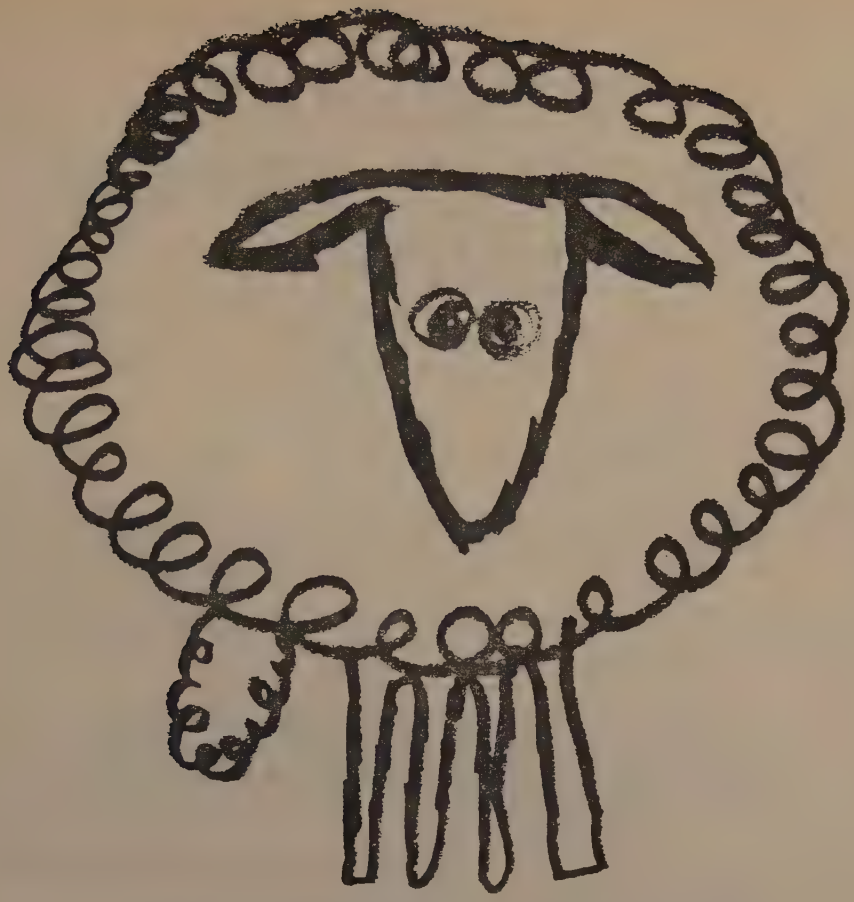
Parkes, A. S. [Edited by] (1960). **Marshall's physiology of reproduction. Volume I, Part 2.** pp. xx+877. London: Longmans, Green & Co. Ltd. 3rd edit. 240s.

Seiden, R. (1961). **Livestock health encyclopedia.** pp. x+628. New York: Springer Publishing Company. 2nd edit.

Villee, C. A. [Edited by] (1961). **Control of ovulation. Proceedings of the Conference held at Endicott House, Dedham, Massachusetts, 1960.** pp. x+251. Oxford (New York, London & Paris): Pergamon Press. 70s.

Anon. (1961). **Poultry disease under modern management.** pp. vii+162. London: Iliffe Books Ltd. 13s. 6d.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey, Surrey.



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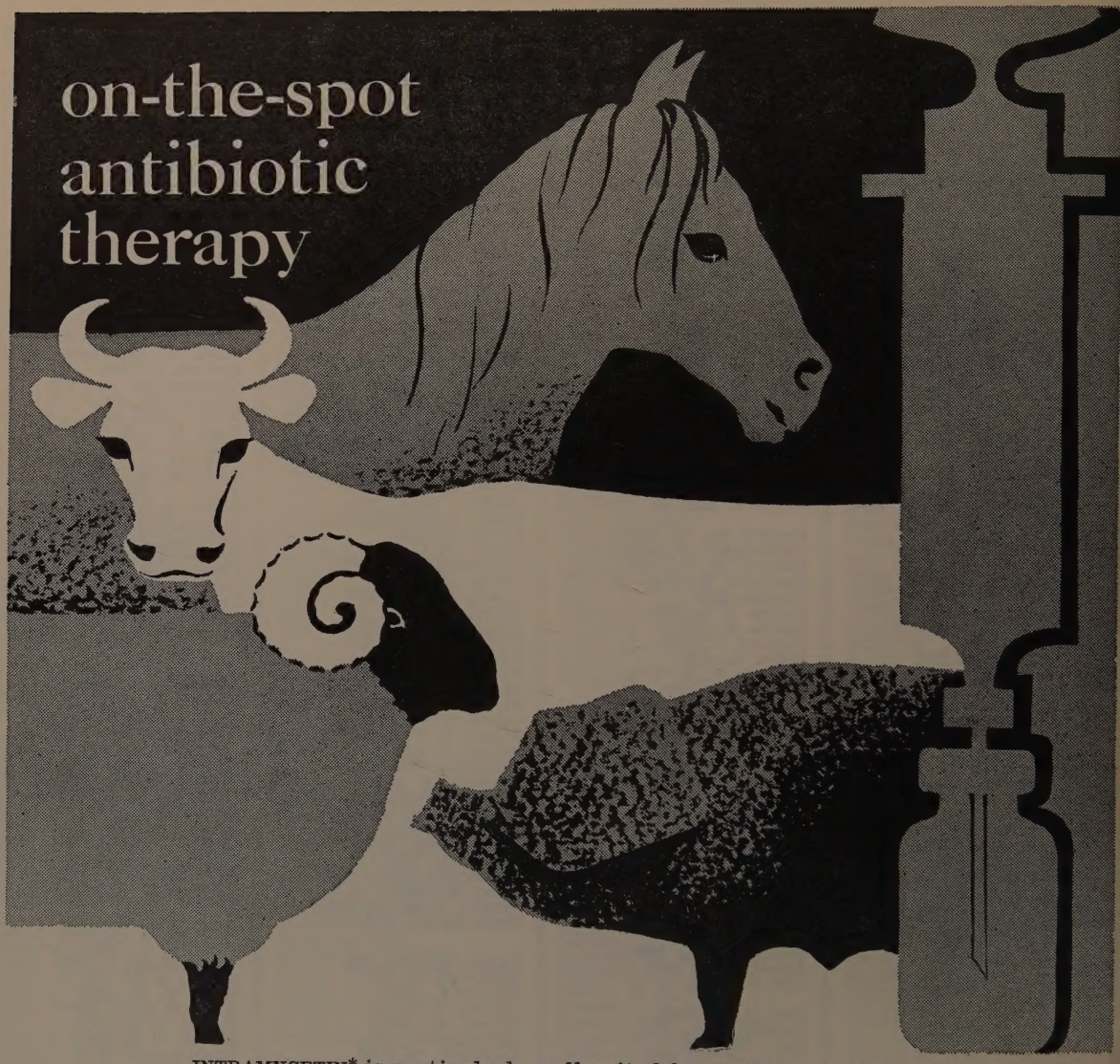

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